

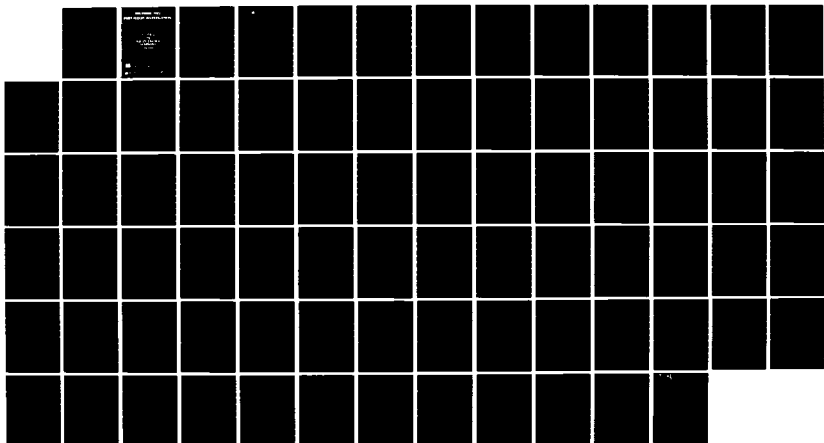
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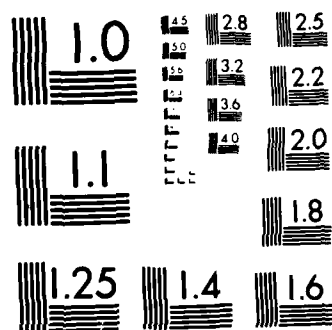
DECEMBER 1982 POST-FLOOD INVESTIGATION: CENTRAL AND
SOUTH CENTRAL LOUISIANA(U) GULF SOUTH RESEARCH
DEVELOPMENT CORP BATON ROUGE LA APR 83 PD-E-83-01
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The report is a Flood Damage Assessment of flooding in South Central, La., during Dec 1982. This information may be used in support of justification of potential flood control projects. Damages are tabulated in acres and a dollar estimate is provided for specific project areas and for the entire area.		

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April 1983

Letter Report

Government Contract No. DACW29-82-D-0388
Delivery Order #0002
GSRDC Project No. 101-11 (B23)

DECEMBER 1982 POST FLOOD INVESTIGATION
CENTRAL AND SOUTH CENTRAL LOUISIANA

Prepared for:

U.S. Army Corps of Engineers
New Orleans District
P. O. Box 60267
New Orleans, Louisiana 70160

29 April 1983

SUBJECT: Flooding in Central and South Central Louisiana, December 1982

1. Purpose and Scope. The purpose of this report is to compile and present data associated with the flooding during the final week of 1982 and the first several weeks of 1983 in central and south central Louisiana. Field investigations were made by survey teams from Gulf South Research Development Corporation (GSRDC) in four designated areas: Aloha-Rigolette; Rapides Island; Bayou Cocodrie; and Eastern Rapides. Within these areas, 18 individual reaches were specifically delineated for GSRDC's survey effort. GSRDC's survey teams collected data by "visual surveys" of the areas inundated, and by personal interviews with state and local officials and selected private individuals. The information collected from the surveys and presented by reach in this report pertains to the following categories:

- a. Residential flooding, both urban and rural, including number of acres and structures flooded (Appendix A explains how structural damages were calculated and Appendix B shows how structural values were determined);
- b. Values of structures flooded;
- c. Depth of flooding over the main floor;
- d. Types of structures flooded (one or two story, mobile homes, camps, etc.);
- e. Ability of residents to prevent or minimize damage (sandbagging, moving or elevating furniture, etc.);
- f. Non-residential flooding, both urban and rural, including number of acres and structures flooded, according to type of business, estimated value of structures, depth of flooding over main floor;
- g. Flooding damage to vehicles, in those areas where such damage occurred;
- h. Agricultural flood damages, including total number of acres flooded and cleared acres flooded, with cleared acres flooded aggregated by specific crops or pasture; duration of flooding (days); cost of re-establishing pasture, per acre; cattle handling costs, including, where available, costs for relocation, supplemental pasture and feed, and returning cattle to original pasture; other flood-related agricultural damages--fence repair, vehicle damage, clean-up costs, etc. (Appendix C explains how agricultural damages were calculated);

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- i. Determination of state, parish and municipal expenditures for manpower, materials, and related costs for road and bridge repairs, emergency operations, etc.;
 - j. Determination of evacuation costs, where available, including number of residents evacuated, length of evacuation, and cost estimates for relocation to Red Cross shelters, private homes, etc.;
 - k. Determination of other acreage flooded (marsh, woodland, etc.), by reach;
 - l. Modification of the original Government overflow map, indicating the actual extent of flooding based on field data compiled.
2. Description of the Flood--Central and South Central Louisiana.

a. The initial flooding in central and south central Louisiana resulted from heavy rains which began to fall around Christmas Eve. In some areas, the rainfall continued into the week following Christmas, by which time 20 inches of rain had accumulated in several parishes.

b. Area residents, many of whom were unprepared, were faced with serious flash flooding threats. As the rains continued, flash flooding problems were compounded by backwater flooding, as overburdened streams, canals and drainage ditches were unable to drain adequately into larger bayous and rivers which were themselves beginning to overflow their banks.

c. Many residents were successfully evacuated, and many were able to minimize damages to their homes and belongings by sandbagging and moving or raising furniture and other valuables. As rivers crested and water levels began to slowly decrease, most evacuees were able to return home by the second week in January. However, residents of some areas were not able to return to their homes for several weeks.

d. As the result of the extensive damages from the flooding, Governor Treen declared 19 parishes disaster areas, and formally requested Federal aid from President Reagan for residents of these parishes. Ultimately, two parishes within the study area, Grant and Rapides, were declared eligible for Federal relief.

3. Summary of Physical and Economic Damages--
Central and South Central Louisiana

a. General.

(1) This section of the report provides summarized information on the areas inundated by the December 1982 flooding in central and south central Louisiana, and damages that resulted from the flooding. Within the 18-reach study area, two types of flooding occurred. Flash-flooding of urban streets, rural roads and bridges, and homes and businesses resulted from extremely heavy rainfall which began Christmas Eve and, in some areas, continued for several days. Many residents awoke Christmas Day to find as much as a foot of water already in their homes.

(2) Backwater flooding also became a problem, as bayous, streams and local drainage ditches overflowed from the heavy rains. As the rains continued, many of these smaller water bodies were unable to drain properly into larger bodies of water, which were also soon filled to overflowing.

b. Areas Inundated.

(1) Within each of the 18 designated reaches, total land area was sub-divided into land-use categories: urban, rural developed, agricultural, wooded, and other. The urban category includes all incorporated places and those closely developed areas with 2,500 or more inhabitants. Rural developed areas are those containing various sparse improvements not considered urban; generally, this category comprises small population centers, crossroads-type developments, scattered houses and businesses, and miscellaneous farm structures. Agricultural lands include all croplands and pastures, excepting wooded pastures and marshland used for grazing. Wooded areas are substantially to densely tree shaded. Other lands consist primarily of marsh and open swamp areas. Table 1 shows the extent of flooding by land-use category throughout the study area.

Table 1. Summary of Areas Inundated
December 1982 Flooding--Central and South Central Louisiana

Land Use	Area Inundated (Acres)
Urban	1,130
Rural Developed	20 ^a
Agricultural	262,380
Wooded	79,700
Other (includes marsh)	37,300
Total	380,530
Rounded	(380,500)

^aLimited to acreage reported and planimetered.

c. Economic Damages.

Table 2 contains data on total estimated flood damages in the study area, by major damage categories. Urban damages in the residential, commercial, and other categories include physical damages to structures and to contents as well as associated cleanup costs, stock losses, and the economic loss of business. Agricultural damage includes the loss of production of agricultural crops, livestock losses, physical damages to farm equipment and supplies, and restoration costs. Government losses include physical damages to levees and buildings as well as flood-fighting costs, cleanup costs, and extraordinary administrative expenses. Transportation losses include physical damages to roads and bridges. Losses categorized as

those to utilities include physical damages to plants, machinery, equipment, supplies, and other facilities, the economic loss of business, and cleanup costs. Miscellaneous expenditures are the costs for evacuation and subsistence and expenditures by relief organizations.

Table 2. Summary of Flood Damages
December 1982 Flooding--Central and South Central Louisiana

Category	Damage (Dollars)
Urban and Rural	
Residential	\$4,849,500
Commercial	362,600
Other	-0-
Agricultural	6,887,000
Government	25,000
Transportation	832,600
Utilities	2,566,000
Miscellaneous	179,400
Total	\$15,702,100
Rounded	(\$15,702,000)

4. Damage Appraisal--Aloha-Rigolette, Bayou Rigolette Reach

a. General.

(1) Bayou Rigolette Reach is located in Grant and the northern part of Rapides parishes. It extends roughly from Pineville at the southern end to McNeely (just south of Colfax) at the northern end. The Red River levee forms the western boundary, while the bluff (the 100-foot contour) forms the eastern boundary of this reach. Bayou Rigolette runs north-south through the entire reach. Bayous Darrow and Walden are the other major streams in this area.

(2) This reach is comprised of agricultural lands (e.g., soybeans, wheat, cotton, milo, and pasture), pine forests, and scattered narrow bands of bottomland hardwoods. It encompasses approximately 46,700 acres and is sparsely populated.

b. Areas Inundated.

(1) Heavy rainfall within a short period of time partially obstructed bayous, and the inability of Bayou Rigolette floodgates to release water from Bayou Rigolette and its tributaries caused extensive backwater flooding

in this reach. Flooding was primarily from bayous Rigolette, Darrow, and Walden. The Rigolette community, a rural community near Bayou Rigolette and near the floodgates, was one of the areas flooded by backwater. Approximately seven residences in this area, including four mobile homes, were flooded. In addition, at least one farmer quickly built a levee around his house.

(2) Although most of the homes flooded were in the southern part of the reach, throughout the reach flooding was widespread covering approximately 65 percent of the reach. A number of highways, including portions of U.S. 71, La. 492, and La. 8, were under water, and part of the Meade Road, which runs between bayous Rigolette and Darrow and crosses Bayou Darrow, was under water for approximately one month.

(3) The extent of flooding is shown by land use categories in Table 3.

Table 3. Acres Flooded--Aloha-Rigolette, Bayou Rigolette Reach, December 1982 Flooding--Central and South Central Louisiana

Land Use	Area Inundated (Acres)
Urban	
Residential	-0-
Commercial	-0-
Rural Developed	10
Agricultural ^a	27,600
Wooded	3,200
Other	-0-
Total	30,810

^aIncludes 11,100 acres of fallow land.

c. Economic Damages.

(1) Urban.

(a) There are no urban areas within Bayou Rigolette Reach; therefore, there were no urban damages.

(2) Rural Developed.

(a) Approximately 10 acres of rural developed land were inundated. Within this area, seven structures, including four mobile homes, were flooded.

(3) Agricultural.

(a) The greatest losses in this reach were sustained by agricultural production. Approximately 27,600 acres of agricultural lands, including about 1,425 acres of beans (not harvested), 6,325 acres of wheat, and 8,750 acres of native and improved pastures were inundated as a result of backwater flooding primarily from bayous Rigolette, Darrow, and Walden. The winter wheat crop and the improved pasture received the most extensive damage, with monetary losses of over \$717,000 and over \$690,000, respectively. Both improved and unimproved pastures were under water for varying periods of time. This resulted in expenditures for moving cattle to higher ground and for supplemental feed. In addition, over 1,400 acres of beans that had not been harvested were lost, and a few cattle and hogs were lost. Total agricultural damages for this reach were estimated to be approximately \$1,925,600.

(4) Other.

(a) A government official estimated that about \$92,500 damage was done to roads and bridges in the Grant Parish portion of Aloha-Rigolette area. Of this total, about three-fourths, or about \$69,375 occurred in the Bayou Rigolette reach.

(b) Grant Parish officials had no estimates available for the costs associated with evacuations, mass care, family assistance, utilities damage, or other flood-related activities or problems.

d. Summary of Damages. Table 4 gives a disaggregation of damages within Bayou Rigolette Reach.

5. Damage Appraisal--Aloha-Rigolette, Bayou Du Grappe Reach

a. General.

(1) Bayou Du Grappe Reach is located in Grant Parish. It extends from the northern boundary of Bayou Rigolette Reach (roughly a line from McNeely north to Bayou Rigolette along the bluff) north to Highway 1240 along the south side of Nantachie Lake. The Red River levee serves as the western boundary of this reach, with the bluff (the 100-foot contour) and Iatt Lake Dam serving as the eastern boundary. The town of Colfax is located in this area.

(2) A number of important bayous criss-cross this small reach. Bayou Rigolette runs from Iatt Lake through this reach and south into Bayou Rigolette Reach. In addition, Cornfeine Bayou, in the northern part of the reach, flows into Bayou Du Grappe, which flows into Sugarhouse Bayou, which flows into Bayou Rigolette.

Table 4. Summary of Flood Damages--Aloha-Rigolette,
Bayou Rigolette Reach, December 1982 Flooding--Central and
South Central Louisiana

Category	Damages (Dollars)
Urban	
Residential	\$ -0-
Commercial	-0-
Other	-0-
Rural Developed	92,700
Agricultural	1,925,600
Government	-0-
Transportation ^a	69,400
Utilities ^b	-0-
Miscellaneous	-0-
Total	\$2,087,700

^aDamage to roads and bridges.

^bUtilities report no significant damages.

(3) This reach encompasses approximately 14,000 acres. It consists primarily of agricultural lands (e.g., soybeans, wheat, cotton, milo, and pasture) and pine forests.

b. Areas Inundated.

(1) Heavy rainfall within a short period of time partially obstructed bayous, and the inability of the Bayou Rigolette floodgates to release water from Bayou Rigolette and its tributaries quickly caused water in Bayou Rigolette and its tributaries (primarily bayous Du Grappe, Sugarhouse, and Cornfeine in Bayou Du Grappe Reach) to back up across the land. As the rainfall continued, the water ran off into the bayous; however, the water began backing up at the floodgates (south of this reach) and within a few days backed up into the Bayou Du Grappe Reach area. This backwater caused widespread flooding, with the most serious flooding in this reach occurring in the area southwest of the Iatt Lake Dam. Much of this land was still inundated at the time of the survey (March 1983).

(2) The eastern part of the town of Colfax was flooded as a result of backwater primarily from Sugarhouse Bayou. Ten residential structures were reportedly inundated for two to three days.

(3) The extent of flooding is shown by land use category in Table 5.

Table 5. Acres Flooded--Aloha-Rigolette, Bayou Du Grappe Reach,
December 1982 Flooding--Central and South Central Louisiana

Land Use	Area Inundated (Acres)
Urban	
Residential	50
Commercial	-0-
Rural Developed	-0-
Agricultural ^a	9,100
Wooded	3,400
Other ^b	400
Total	12,950

^aIncludes 6,600 acres fallow land.

^bMarsh

c. Economic Damages.

(1) Urban.

(a) The only urban area located within Bayou Du Grappe Reach is the town of Colfax. Colfax experienced some flooding on the eastern side of the railroad tracks, with nine houses and one mobile home inundated for two to three days. Damages to these residences totaled approximately \$123,700. No vehicles were reported damaged.

(2) Rural Developed.

(a) There were no rural developed areas inundated in this reach.

(3) Agricultural.

(a) The greatest losses in Bayou Du Grappe Reach were sustained by agricultural production. Over 2,500 acres of wheat, improved pastures, and beans (not harvested) were inundated as a result of backwater flooding from Bayou Rigolette, Bayou Darrow, and Walden Bayou. The winter wheat crop and the improved pasture received the most extensive damage, with monetary losses of approximately \$99,200 and \$79,500, respectively. Both improved and unimproved pastures were under for varying periods of time, with some of these pastures still under water at the time of the survey. This resulted in expenditures for moving cattle to higher ground and for supplemental feed. In addition, approximately 400 acres of beans that had not been harvested were lost, and a few hogs were lost. Total agricultural losses for this reach were estimated to be approximately \$330,500.

(4) Other.

(a) As stated in the discussion of the Bayou Rigolette reach, government officials reported \$92,500 in damages to roads and bridges in the Grant Parish portion of the Aloha-Rigolette area. Of this total, approximately \$23,100 damage, or one-fourth of the total occurred in the Bayou Du Grappe Reach. No other government expenditures or flood-related damages were reported.

d. Summary of Damages. Table 6 gives a disaggregation of damages within Bayou Du Grappe Reach.

Table 6. Summary of Flood Damages--Aloha-Rigolette,
Bayou Du Grappe Reach, December 1982 Flooding--
Central and South Central Louisiana

Category	Damage (Dollars)
Urban	
Residential	\$123,700
Commercial	-0-
Other	-0-
Rural Developed	-0-
Agricultural	330,500
Government	-0-
Transportation ^a	23,100
Utilities ^b	-0-
Miscellaneous	-0-
Total	\$ 477,300

^aDamage to roads and bridges.

^bUtilities report no significant damages..

6. Summary of Physical and Economic Damages,
Aloha-Rigolette Area

(a) Total acres flooded in the Aloha-Rigolette area are shown in Table 7, by land-use category.

(b) Total estimated economic damages in the Aloha-Rigolette area are shown in Table 8.

Table 7. Summary of Areas Inundated, by Reach, Aloha-Rigolette Area
December 1982 Flooding in Central and South Central Louisiana

Reach	Urban (Acres)	Rural Developed (Acres)	Agricultural (Acres)	Wooded (Acres)	Other (Acres)	Total (Acres)
Bayou Rigolette	-0-	10	27,600	3,200	-0-	30,810
Bayou Du Grappe	50	-0-	9,100	3,400	400	12,050
TOTAL	50	10	36,700	6,600	400	43,760

Table 8. Summary of Total Estimated Damages by Reach,
Aloha-Rigolette Area
December 1982 Flooding in Central and South Central Louisiana
(Dollars)

Reach Losses	Urban and Rural				Agricultural	Government	Transportation	Utilities	Miscellaneous	Total
	Residential	Commercial	Other	Total						
Bayou Rigolette Reach	92,700	-0-	-0-	92,700	1,925,600	-0-	69,400	-0-	-0-	2,087,700
Bayou Du Grappe Reach	123,700	-0-	-0-	123,700	330,500	-0-	23,100	-0-	-0-	477,300
TOTAL	216,400	-0-	-0-	216,400	2,256,100	-0-	92,500	-0-	-0-	2,565,000

7. Damage Appraisal--Rapides Island

a. General.

(1) This area in Rapides Parish lies northwest of the city of Alexandria, and consists of approximately 30,850 acres. The area is bounded by MacArthur Drive on the east, Highway 1 on the north, Enterprise Road on the northwest and England Drive on the southwest.

The largest single development in Rapides Island is England Air Force Base; the area also contains a number of residential subdivisions and one 800-unit public housing project, Wooddale Park. Non-residential development in the area is relatively light. Approximately 16,800 acres of Rapides Island was inundated by the December flooding.

b. Areas Inundated.

(1) Structural flooding occurred intermittently throughout Rapides Island, in subdivisions on both sides of Highway 1. South of Highway 1, the Wooddale Park Housing Project was heavily inundated, as were several homes in a subdivision immediately south of the project, on Woodlawn and LaSalle

streets. Elsewhere in Rapides Island, several suburban homes along Highway 1 just east of Airbase Road were flooded, including homes on Kerry, Roscommon, Kilkinney and Tipperary streets. North of Highway 1, structural flooding was minor, with one structure on Karla Street inundated (across Highway 1 from the Kerry-Roscommon area).

(2) Although most streets in Rapides Island were under water for several days, structural flooding was confined to those areas described above. No non-residential structures were reported flooded.

(3) Table 9 shows the extent of flooding by land use category.

Table 9. Acres Flooded--Rapides Island
December 1982 Flooding--Central and South Central Louisiana

Land Use	Area Inundated (Acres)
Urban	
Residential	100
Commercial	-0-
Rural Developed	-0-
Agricultural ^a	15,100
Wooded	1,600
Other	-0-
Total	16,800

^aIncludes 10,600 acres of fallow land.

c. Economic Damages

(1) Urban

(a) A total of 244 urban residential structures were flooded in Rapides Island. Interviews with Rapides Parish officials indicated that residential flooding in the Rapides Island area occurred mostly in lowlying areas with poor drainage. This was confirmed by windshield surveys, interviews with area residents, and the parish road and bridge damage report, which showed that sections of some streets and subdivisions were heavily inundated, while other sections of the same streets and subdivisions received relatively minor flooding and no structural inundation.

(b) Approximately 200 units of the Wooddale Housing Project were heavily flooded, along with a few houses in the adjacent subdivision. Residents of the housing project agreed with those in the subdivision whose houses were flooded that the area is so low that it should never have been

developed. They contended that flash flooding occurs with any moderate to heavy rain, and that in the housing project and the lower part of the subdivision, the water takes several days to drain from yards and streets. While the housing project and approximately 20 houses in the subdivision received one foot of water or more, about 300 houses on slightly higher ground in the subdivision received flooding only in the yards. Again, this indicates that location in lowlying areas, along with poor drainage, caused most of the residential flooding in the Rapides Island area.

(c) A total of 94 residential structures were flooded, including 50 structures (200 units) in the housing project. Table A-3, in Appendix A contains data on residential flood damages in Rapides Island, including estimated structure damage figures, depth and duration of flooding. Rapides Island residents reported no damage to vehicles, and some residents were able to protect personal property by moving or raising it.

(2) Rural Developed.

(a) There were no rural developed areas inundated in this reach.

(3) Agricultural.

(a) Officials from the Soil Conservation Service (SCS) and Agricultural Stabilization and Conservation Service (ASCS) estimated that a total of 15,100 acres of agricultural land in Rapides Island were inundated. The most extensive flood damages were to 2,250 acres of improved pasture, 1,800 acres of wheat, and 450 acres of soybeans. Approximately 120 head of cattle were relocated, but none were lost.

Parish officials and individual farmers were unable to provide cost estimates for damages to crops, land, or vehicles and equipment. Figures on expenditures for cattle relocation, supplemental feed and pasture, repairs and clean-up operations were likewise unavailable. However, GSRDC's agricultural economists estimated these costs, based on data collected in other reaches and LSU crop budget data.

(4) Other

(a) As of April 20, 1983, the city of Alexandria and Rapides Parish officials had not completed final tabulations of street, road and bridge damages. The parish engineer's office had compiled a list of parish streets damaged by the December flooding, but as one official stated, the damage was so "scattered" throughout the parish that aggregated damage figures will not be tabulated for some time. Because no total road and bridge damages have been tallied, officials were unable to provide precise figures for Rapides Island or any of the other reaches contained within Rapides Parish. One official provided a preliminary estimate of \$75,000 to \$100,000 in damages to Rapides Island roads and bridges, but he emphasized that at this point, this figure should be considered no more than a rough estimate. Of this estimated total, about \$10,000 is for bridge erosion, with the remainder for subdivision streets and parish roads.

(b) Data on damage to public and private utilities were available only on a city-wide basis. However, much of this damage occurred within the corporate limits of Alexandria, primarily in Eastern Rapides, Reach 1 or outside the study area. It was estimated that approximately five percent of the total public and private utility damages in the parish occurred in the Rapides Island area.

(c) In terms of evacuation costs, the Alexandria city engineer provided an estimated cost total of \$2,400. While he was unable to say how much of this total was for evacuation of Rapides Island residents, the project team estimated that approximately five percent was for the Rapides Island area. Red Cross officials estimated that about 100 or more residents of Rapides Island left their homes and took shelter in the Rapides Parish Coliseum, some for as long as a week. The Red Cross' estimated costs for housing and feeding these evacuees are \$15,000.

(d) Rapides Parish distributed about 12,500 sandbags at a cost of 50¢ per bag. An estimated 2,000 were distributed in the Rapides Island area, for total costs of around \$1,000.

(e) Other than these costs, officials in Rapides Parish and the city of Alexandria were not able to estimate the percentage of city and parish flood damage expenditures in Rapides Island.

d. Summary of Damages. A disaggregation of damages in the Rapides Island area is presented in Table 10.

8. Damage Appraisal--Bayou Cocodrie, Reach B.

a. General.

(1) This reach is in Rapides Parish, bordering Rapides Island on the south, and is bounded by La. Highway 1202 on the north, Bayou Cocodrie on the south, Bayou Bouef, and the Bayou Bouef Cocodrie Diversion Channel on the west, and roughly by U.S. Highway 71 on the east. The area contains several large residential subdivisions, including Penny Acres and Martin Park, both of which received some of the worst flooding in Rapides Parish. There is also considerable commercial development within the reach. The southern and western portions of this reach contain both residential developments and agricultural acreage, some of which was inundated by the December flooding.

b. Areas Inundated.

(1) Flooding was widespread in this area, with a number of subdivisions receiving water in houses and yards. West of McKeithen Drive, several houses on Pleasant Drive, Sunshine, Ann and Julie streets were flooded. Scattered structural flooding occurred on Larkspur and Bluebonnet streets, between Highways 496 and 28, just west of the Diversion Canal. Northeast of Highway 496, houses on Victoria Drive were inundated. Nearly 20 homes were flooded on Lynnwood, Greenwood and Greenway streets, just south of the South Traffic Circle. To the southwest, between MacArthur

Drive and Masonic Drive, homes on Mohon, Kimberly and Roanoke streets were flooded.

Table 10. Summary of Flood Damages--Rapides Island
December 1982 Flooding--Central and South Central Louisiana

Category	Damages (Dollars)
Urban	
Residential	\$2,355,700
Commercial	-0-
Other	-0-
Rural Developed	-0-
Agricultural	527,700
Government ^a	1,700
Transportation ^b	100,000
Utilities ^c	128,000
Miscellaneous ^d	15,000
Total	\$3,128,100

^a\$1,000 for sandbags, \$500 for maintenance vehicles and crews (five percent of city of Alexandria total), and \$200 for fire department pumping operations (five percent of city of Alexandria total).

^bDamage to roads and bridges.

^cFive percent of damages for the city of Alexandria.

^dEstimate of Red Cross costs for direct assistance to families and mass care.

(2) The heavy flooding in Penny Acres subdivision, south of Alexandria off U.S. Highway 165, occurred mainly on Isabelle Street. In nearby Martin Park, Spencer, Mil-Mar, Ellis and Mertens streets were badly flooded, but structural flooding was light, compared to Penny Acres. Elsewhere, isolated flooding occurred on Highpoint Street near Bayou Robert, on Windemere Boulevard south of Highway 28, and along highway 165, between the Diversion Canal and Bayou Bouef.

(3) Non-residential flooding occurred mostly in the area described above--on both sides of Highway 165 between Penny Acres and the Diversion Canal. In addition to the businesses which were flooded, two churches and a Lions Club meeting hall were inundated.

(4) Table 11 shows the total acres flooded, by land use category.

Table 11. Acres Flooded--Bayou Cocodrie, Reach B
December 1982 Flooding--Central and South Central Louisiana

Land Use	Area Inundated (Acres)
Urban	
Residential	200
Commercial	10
Rural Developed	-0-
Agricultural ^a	23,100
Wooded	4,100
Other	-0-
Total	27,400

^aIncludes 13,700 acres fallow land.

c. Economic Damages.

(1) Urban.

(a) With the exception of the Penny Acres area, where structural flooding occurred in every house on one street, flooding in Bayou Cocodrie, Reach B, occurred intermittently, as in Rapides Island. Within individual subdivisions like Martin Park, only four houses in the lowest part of the subdivision received water; the remaining houses on the same street received no water.

(b) This general pattern held for the entire reach, as some houses received six inches to a foot of water, while only two or three houses away, water reached only into the yard. In the Pleasant Drive area, where five homes flooded, one resident attributed the flooding to the removal of a levee just to the north, as part of the conversion of a fish farm to a soybean farm.

(c) Residents of other areas where houses and apartments were flooded--Larkspur and Bluebonnet streets, Victoria Drive, areas south of the Traffic Circle and south of La. Highway 28--blamed their flooding on poor drainage, much of which resulted from the new development or conversion of land and/or road construction. For example, Victoria Drive residents claimed that the resurfacing of La. Highway 496 elevated the road about six inches. They contend that this causes rainwater to flow northward, toward their homes, instead of southward across Highway 496, as it used to.

Like those residents in other areas which received intermittent structural flooding, Victoria Drive residents stated that the local drainage systems are simply unable to handle large amounts of water which are "dumped

down on them" from areas up above Reach B. Throughout the reach, individuals whose houses were flooded described their subdivisions as "flood-prone," and stated that because of poor drainage, they experience street and yard flooding even without an unusually heavy rain as occurred in December.

(d) In Penny Acres, where all of the 40 houses on one street flooded, residents blamed flooding on new land development and clearing of land to the north and northwest for agricultural purposes. According to them, this land clearing and development has caused more water to drain into their area, overtaxing the Diversion Canal. They also complained of obstructions and debris in the Diversion Canal which further impede its ability to adequately drain water from the north and northwest.

(e) Overall, residents whose houses were flooded blamed their problems on inadequate drainage systems, combined in some cases with improperly regulated development and clearing of land. Unlike many residents of the Rapides Island area, residents of this area did not feel that their neighborhoods should never have been developed. Instead, they feel that uncontrolled development to the north and northwest, combined with drainage ditches that are too small or too obstructed by debris, have made their areas "flood-prone."

(f) In Bayou Cocodrie, Reach B, a total of 102 residential structures were inundated. Table A-4, in Appendix A contains data on structural damages, depth and duration of flooding. While some residents were able to protect their furniture and other belongings, many were not, particularly where water rose rapidly overnight. A number of residents spoke of waking up to find several inches of water in their houses; these people suffered heavy damage to the contents of their homes since they were forced to evacuate without moving or elevating furniture, appliances, etc. No residents were able to provide cost estimates of damages to vehicles.

(g) Non-residential damage in Bayou Cocodrie, with Reach B, was also heavy. Although only 12 commercial and industrial structures were flooded, damages were more severe on a per-structure basis. Damages to non-residential structures are fully enumerated in Table A-5, in Appendix A.

(2) Rural Developed.

(a) There were no rural developed areas inundated in this reach.

(3) Agricultural.

(a) According to SCS and ASCS estimates, and the interviews conducted with individual farmers, about 23,080 acres of agricultural land were inundated. This included 4,500 acres of pasture, 4,000 acres of wheat, and 900 acres of soybeans. In addition, about 30 head of cattle and 40 hogs were lost to the floods. Approximately 250 cattle were relocated. On the average, agricultural land in Bayou Cocodrie, Reach B, was inundated for a week, at an average depth of 1.5 feet.

(b) Neither parish officials nor individual farmers were able to provide cost estimates for crop damage, cattle relocation, supplemental feed, or other flood-related damages and problems. GSRDC's agricultural economists estimated these costs, based on data collected in other reaches and LSU crop budget information.

(4) Other.

(a) Again, officials in Rapides Parish did not have cost figures on road, street and bridge damage for the parish, or for individual reaches. Some streets within Bayou Cocodrie, Reach B, received significant damage, as water was slow to drain from suburban streets in Penny Acres and other residential areas. City officials stated that some of the flood damages to public utilities (electricity, gas and water) occurred in this area. However, they were unable to isolate Reach B's percentage share of these damages. GSRDC's survey team estimated that 25 percent of the city of Alexandria's damages occurred in this reach.

(b) Although at least 100 people were forced to leave their homes in Reach B, no government agency was able to estimate how many of these people received city or parish evacuation assistance, shelter, food, etc. Red Cross officials reported that some Penny Acres residents used Red Cross shelters, but they were uncertain as to how many did, or for how long. The Red Cross estimated per-person costs of \$150.00, for a cost total of at least \$15,000.

(c) An estimated 3,000 sandbags were distributed throughout Reach B, at a total cost of approximately \$1,500. However, a number of residents were furnished sandbags free of charge by a local sand and gravel company, and others reported purchasing sandbags when they found that the city would be delayed in delivering them.

(d) No other damage figures specific to Bayou Cocodrie, Reach B, were available.

d. Summary of Damages. Table 12 presents a disaggregation of damages in Bayou Cocodrie, Reach B.

9. Damage Appraisal--Bayou Cocodrie, Reach D

a. General.

(1) Reach D takes in parts of Rapides and Evangeline parishes, extending roughly from Clearwater in lower Rapides Parish southward to Louisiana Highway 106, just north of the town of St. Landry in northern Evangeline Parish. Reach D extends just west of Bayou Cocodrie on the west and to the Avoyelles-Evangeline parish line on the east. The communities of Lonepine, Centerville and Dossman are included in Reach D, which consists of a total of approximately 58,400 acres. Approximately 28,900 acres of land were inundated in Reach D, which is largely uninhabited.

Table 12. Summary of Flood Damages--Bayou Cocodrie, Reach B
December 1982 Flooding--Central and South-Central Louisiana

Category	Damages (Dollars)
Urban	
Residential	\$1,391,400
Commercial	315,500
Other	-0-
Rural Developed	-0-
Agricultural	1,016,300
Government ^a	5,100
Transportation ^b	NA
Utilities ^c	642,000
Miscellaneous ^d	15,000
Total	\$3,385,300

NA = Not Available.

^a\$1,500 for sandbags, \$2,600 for maintenance vehicles and crews (25 percent of city of Alexandria total), and \$1,000 for fire department pumping operations (25 percent of city of Alexandria total).

^bDamages to roads and bridges in Reach B were not available because the city of Alexandria had not completely tabulated these damages. Officials could not estimate these damages.

^cTwenty-five percent of the damages for Alexandria.

^dEstimate by Red Cross of costs for direct assistance to families and mass care.

b. Areas Inundated.

(1) The worst flooding in Reach D occurred in the upper northeast portion, in the Lonepine vicinity. In fact, all of the Reach D structures inundated were in this area, just north of Lonepine around the intersection of Louisiana highways 181 and 115. South of Lonepine, several roads were flooded and a few bridges were washed out, but no structural inundation was reported.

(2) No commercial or industrial structures were reported inundated; the only non-residential structure reported flooded was a church on Louisiana Highway 181.

(3) Table 13 shows total acres flooded, by land use category.

Table 13. Acres Flooded--Bayou Cocodrie, Reach D
December 1982 Flooding--Central and South Central Louisiana

Land Use	Area Inundated (Acres)
Urban	
Residential	-0-
Commercial	-0-
Rural Developed	10
Agricultural ^a	21,100
Wooded	6,800
Other	1,000
Total	28,910

^aIncludes 19,200 acres fallow land.

^bMarsh.

c. Economic Damages

(1) Urban.

(a) There are no urban areas in this reach.

(2) Rural Developed.

(a) Again, all of the residential flooding in Reach D occurred just north of Lonepine, in the northeast corner of the reach. Approximately 10 acres was flooded. One mobile home, seven wood homes and one wood camp were flooded. Table A-6 in the appendix contains data on the sizes of these structures, depth and duration of flooding, and damage estimates.

(b) Residents of this area attributed their flooding to inadequate drainage, and complained particularly that culverts in the area were too small to drain large amounts of water. Several residents also said that this area receives much of the water draining from Rapides Parish, and the heavy rains in December simply compounded drainage problems which already existed.

(c) Most residents were able to minimize or totally prevent inundation of their houses by sandbagging or building levees around their homes. Only one vehicle with an estimated value of \$400 was reported damaged. The few people evacuated from their homes stayed with relatives and no government costs were incurred.

(d) As stated earlier, the only non-residential structure damaged was a church on Highway 181. This 1,200 square-foot wooden structure was valued at \$33,000, and received two feet of water, as shown in Table A-7 in Appendix A.

(3) Agricultural.

(a) According to SCS and ASCS personnel, agricultural damages in Reach D were fairly minor. Interviews with area farmers showed that 1,400 acres of rye grass, 500 acres of wheat, and 35,000 bales of hay were damaged.

(b) Although 200 cattle were relocated, no livestock were lost. Cost estimates for agricultural damages were unavailable from parish officials or private farmers, but area farmers generally agreed that cattle handling costs, including relocation, supplemental feed and pasture, averaged \$6.00 per head. GSRDC's agricultural economists estimated agricultural damage costs based on data collected in other reaches and LSU crop budget information.

(4) Other.

(a) Officials in Rapides and Evangeline parishes were contacted to determine Reach D damages to roads, bridges and utilities, and other miscellaneous damages. Their comments indicated that the majority of these damages occurred in the Evangeline Parish sections of Reach D.

(b) Rapides Parish officials stated that little or no costs were incurred for transportation, utilities, or other miscellaneous damages. In Evangeline Parish, about \$195,000 damage was done to roads and bridges.

(c) No information was available on damage to public or private utilities in the area. The Red Cross reported expenditures of \$4,358 for mass care and direct assistance to 15 families. This figure does not include administrative costs. They reported that no government costs were incurred for evacuating the 22 families forced to leave their homes. Approximately 4,000 sandbags were distributed, at a cost of about \$2,000.

d. Summary of Damages. Table 14 contains disaggregated flood damage figures for Reach D.

10. Damage Appraisal--Bayou Cocodrie, Reach I.

a. General.

(1) This reach encompasses approximately 79,000 acres in St. Landry and Avoyelles parishes. Reach I is bounded on the north by Louisiana Highway 115 (the southern border of Reach D), and extends as far south as Louisiana Highway 103, just south of the Thistlewaite Wildlife Management Area in St. Landry Parish. Reach I is bounded on the east by Bayou Petite Prairie and on the west by Bayou Bouef. Bayou Wauksha runs through the middle of much of Reach I, which includes the communities of Holmesville, Dubuisson, Garland and Rosa. Much of Reach I is uninhabited woodlands,

Table 14. Summary of Flood Damages--Bayou Cocodrie, Reach D
December 1982 Flooding--Central and South-Central Louisiana

Category	Damages (Dollars)
Urban	
Residential	\$ -0-
Commercial	-0-
Other	-0-
Rural Developed	178,800
Agricultural	271,600
Government ^a	2,000
Transportation ^b	195,000
Utilities ^c	-0-
Miscellaneous ^d	4,800
Total	\$652,200

^a Evacuations occurred, but no governmental costs were incurred. \$2,000 spent for sandbags.

^b Damage to roads and bridges in Evangeline Parish portion of Reach D. For Rapides Parish portion, officials reported that damages were negligible.

^c No known damages according to Rapides and Evangeline parish officials. Utilities report no significant damages.

^d Red Cross expenditures (15 cases of direct family assistance and mass care, does not include administrative costs), plus \$400 in damages for one vehicle.

except for the extreme northern portion, near Bunkie. Approximately 51,000 acres were flooded in Reach I.

b. Areas Inundated.

(1) Most of the flooding in Reach I occurred in uninhabited areas on either side of Bayou Wauksha, around the towns of Rosa and Lebeau. As a result, no residential or non-residential structural flooding was reported, and as described below, most of the Reach I flood damage was agricultural.

(2) Table 15 shows total acres flooded, by land use category.

Table 15. Summary of Acres Flooded--Bayou Cocodrie, Reach I
December 1982 Flooding--Central and South-Central Louisiana

Land Use	Area Inundated (Acres)
Urban	
Residential	-0-
Commercial	-0-
Rural Developed	-0-
Agricultural ^a	37,500
Wooded	13,600
Other	-0-
Total	51,100

^aIncludes 36,900 acres fallow land.

c. Economic Damages.

(1) Urban.

(a) As stated above, no structural flooding of any kind was reported in Reach I. Neither were any reports of damage to vehicles or other property received.

(2) Rural Developed.

(a) There were no rural developed areas flooded in this reach.

(3) Agricultural.

(a) Officials reported that agricultural damage in Reach I was minor, and this was verified by area farmers. About 600 acres of winter improved pasture was inundated for a week. No records of flood-related damage or repair costs were compiled by parish officials or private farmers, but these costs were expected to be very minimal, since no crop damage was done and no cattle were relocated.

(4) Other.

(a) Much of this reach is uninhabited, so that St. Landry and Avoyelles parish officials reported no evacuations or other operations requiring government expenditures. Officials in St. Landry Parish said little or no road and bridge repair would be required, but an estimated \$100,000 damage was done to roads and bridges in Avoyelles Parish.

d. Summary of Damages. Table 16 contains a summary of damages in the Bayou Cocodrie, Reach I area.

Table 16. Summary of Flood Damages--Bayou Cocodrie, Reach I
December 1982 Flooding--Central and South-Central Louisiana

Category	Damages (Dollars)
Urban	
Residential	\$ -0-
Commercial	-0-
Other	-0-
Rural Developed	-0-
Agricultural	68,000
Government	-0-
Transportation ^a	100,000
Utilities ^b	-0-
Miscellaneous	-0-
Total	\$168,000

^aDamage to roads and bridges in Avoyelles Parish only. There were no reports of damages in the St. Landry Parish portion of the study area.

^bUtilities report no significant damages.

11. Damage Appraisal--Bayou Cocodrie, Reach K.

a. General.

(1) This narrow reach extends through much of Evangeline Parish, and is bounded on the east by Bayou Bouef and on the west by Bayou Cocodrie. On the north, Reach K begins at the intersection of La. Highway 106 and Bayou Bouef near the town of Gold Dust, and ends where Bayou Cocodrie meets Bayou Bouef. Most of Reach K is made up of woodlands, with some agricultural acreage; the entire reach includes approximately 35,000 acres.

b. Areas Inundated

(1) Most of the area flooded in Reach K is agricultural. As described below, no structural flooding occurred, and reported agricultural damage was very minor.

(2) Total acres flooded is shown by land use category in Table 17.

Table 17. Summary of Acres Flooded--Bayou Cocodrie, Reach K
December 1982 Flooding--Central and South-Central Louisiana

Land Use	Area Inundated (Acres)
Urban	
Residential	-0-
Commercial	-0-
Rural Developed	-0-
Agricultural ^a	24,500
Wooded	5,600
Other	-0-
Total	30,100

^aIncludes approximately 24,100 acres
fallow land.

c. Economic Damages.

(1) Urban.

(a) Reach K is sparsely inhabited, and contains only small, isolated areas with any significant residential or non-residential structures. No structural flooding, or related damages, evacuations, or emergency operations were reported.

(2) Rural Developed.

(a) No rural developed areas were inundated in this reach.

(3) Agricultural.

(a) According to SCS and ASCS officials, agricultural damages in Reach K were limited. About 400 acres of improved winter pasture were inundated, along with 20 acres of wheat; depth of flooding was about two feet, and some land remained under water for as long as eight days. Few, if any, cattle were relocated. Parish officials had compiled no agricultural damage figures; however, GSRDC's agricultural economists estimated damages based on data collected in other reaches and LSU crop budget information.

(3) Other.

(a) As stated above, Reach K has few inhabitants and relatively little structural development. The only damages of significance reported, other than agricultural damage, was \$26,400 damage done to roads and bridges.

d. Summary of Damages. Table 18 shows the total damages from flooding in Reach K.

Table 18. Summary of Flood Damages--Bayou Cocodrie, Reach K
December 1982 Flooding--Central and South-Central Louisiana

Category	Damages (Dollars)
Urban	
Residential	\$ -0-
Commercial	-0-
Other	-0-
Rural Developed	-0-
Agricultural	40,800
Government	-0-
Transportation ^a	26,400
Utilities ^b	-0-
Miscellaneous	-0-
Total	\$67,200

^aDamage to roads and bridges. Estimate from Police Jury officials.

^bUtilities report no significant damages.

13. Damage Appraisal--Bayou Cocodrie, Reach M

a. General.

(1) Reach M contains 21,440 total acres in St. Landry Parish, and is the southernmost reach within the Bayou Cocodrie area, extending from just south of the Thistlewaite Wildlife Management Area, as far south as the junction of Bayou del Puert and Coulee Rouge, in the vicinity of Leonville. Reach M's western boundary parallels Bayou Carron and Bayou del Puert, and the reach is roughly bounded by Louisiana Highway 103 on the east. No towns of significant size are found in Reach M, much of which is uninhabited. As a result, no structural flooding was reported, and agricultural damage was minimal.

b. Areas Inundated

(1) The heaviest flooding in Reach M occurred along Bayou Toulouse, and in the northwestern portion of the reach, along bayous Carron and Courtableau.

(2) Table 19 shows total acres flooded, by land use category.

Table 19. Summary of Acres Flooded--Bayou Cocodrie, Reach M
December 1982 Flooding--Central and South-Central Louisiana

Land Use	Area Inundated (Acres)
Urban	
Residential	-0-
Commercial	-0-
Rural Developed	-0-
Agricultural ^a	1,700
Wooded	800
Other ^b	300
Total	2,800

^aIncludes approximately 1,300 acres of fallow land.

^bMarsh.

c. Economic Damages.

(1) Urban.

(a) No residential or non-residential structures were reported flooded. No residential or non-residential areas were threatened enough to require sandbagging, removal of property, or other damage minimization efforts. No vehicles were reported damaged.

(2) Rural Developed.

(a) No rural developed areas were flooded in this reach.

(3) Agricultural.

(a) Damages to agriculture were also negligible. About 400 acres of improved pasture were inundated for approximately one week. No livestock were lost or relocated, and parish officials and farmers compiled no records of costs incurred for repair, clean-up, or other flood-related agricultural damages. GSRDC's agricultural economists estimated damages to the improved pasture, based on data collected in other reaches and LSU crop budget data.

(3). Other.

(a) Only \$10,000 damage to study area roads and bridges was reported. This is due largely to the lack of development in this area. Furthermore,

no damage to public or private utilities was recorded, and since no structural flooding or evacuations occurred, no costs were incurred for evacuations, rescue operations, mass care, or family assistance.

d. Summary of Damages. Table 20 contains a disaggregation of damages in Reach M.

Table 20. Summary of Flood Damages--Bayou Cocodrie, Reach M
December 1982 Flooding--Central and South-Central Louisiana

Category	Damages (Dollars)
Urban	
Residential	\$ -0-
Commercial	-0-
Other	-0-
Rural Developed	-0-
Agricultural	36,300
Government	-0-
Transportation ^a	10,000
Utilities ^b	-0-
Miscellaneous	-0-
Total	\$46,300

^aDamage to roads and bridges. Estimate from Police Jury officials.

^bUtilities report no significant damages.

13. Summary of Physical and Economic Damages,
Bayou Cocodrie Area

(a) Total acres flooded in the Bayou Cocodrie area are shown in Table 21, by land-use category.

(b) Total estimated economic damages in the Aloha-Rigolette area are shown in Table 22.

14. Damage Appraisal--Eastern Rapides, Reach 1

a. General.

(1) This reach is entirely within Rapides Parish. Most of the city of Alexandria is contained in Reach 1 of Eastern Rapides. The reach extends

southward beyond Louisiana Highway 457. Its eastern and western boundaries parallel the Red River and U.S. Highway 167, respectively. Reach 1 contains about 59,500 total acres.

Table 21. Summary of Areas Inundated, by Reach, Bayou Cocodrie Area
December 1982 Flooding in Central and South Central Louisiana

Reach	Urban (Acres)	Rural Developed (Acres)	Agricultural (Acres)	Wooded (Acres)	Other (Acres)	Total (Acres)
B	170	-0-	23,080	4,100	-0-	27,350
D	-0-	10	21,100	6,800	1,000	28,900
I	-0-	-0-	37,500	13,600	-0-	51,100
K	-0-	-0-	24,500	5,600	-0-	30,100
M	-0-	-0-	1,700	800	300	2,800
TOTAL	170	10	107,880	30,900	1,300	140,250
ROUNDED	200	10	107,900	30,900	1,300	140,300

Table 22. Summary of Total Estimated Damages, by Reach,
Bayou Cocodrie Area
December 1982 Flooding in Central and South Central Louisiana
(Dollars)

Reach Losses	Urban and Rural				Agricultural	Government	Transportation	Utilities	Miscellaneous
	Residential	Commercial	Other	Total					
Reach B	1,391,400	315,500	-0-	1,706,900	1,016,300	5,100	NA	642,000	15,000
Reach D	171,900	6,900	-0-	178,800	271,600	2,000	195,000	-0-	4,800
Reach I	-0-	-0-	-0-	-0-	68,000	-0-	100,000	-0-	-0-
Reach K	-0-	-0-	-0-	-0-	40,800	-0-	26,400	-0-	-0-
Reach M	-0-	-0-	-0-	-0-	36,300	-0-	10,000	-0-	-0-
Estimated Damages									
TOTAL	1,563,100	322,400	-0-	1,885,700	1,433,000	7,100	331,400	642,000	19,800

NA = Not Available.

b. Areas Inundated.

(1) Heavy flooding occurred in the northern portion of Reach 1, within Alexandria's corporate limits. The areas receiving the most flooding, including structural flooding, were on or adjacent to Hynson Bayou and Chatlin Lake Canal. In one case, residents reported that a closed floodgate near Rapides General Hospital impeded drainage and caused backwater flooding in neighborhoods close to the hospital. Beverly and Chelsea drives, and Los Angeles and 15th streets were among the most heavily flooded streets, with severe residential flooding ranging from a few inches to a foot.

(2) Most residents stated that few if any measures were taken to prevent structural flooding, because the floodwaters rose so quickly and unexpectedly overnight. As a result, severe damage was done to several houses. Although several streets containing significant commercial development were flooded, no businesses were reported inundated. The only non-residential structural flooding reported was that of two schools, as described below.

(3) Table 23 shows total acres flooded, by land use category.

Table 23. Summary of Acres Flooded--Eastern Rapides, Reach 1
December 1982 Flooding--Central and South-Central Louisiana

Land Use	Area Inundated (Acres)
Urban	
Residential	675
Commercial	225
Rural Developed	-0-
Agricultural ^a	15,300
Wooded	8,700
Other	-0-
Total	24,900

^aIncludes 12,300 acres fallow land.

c. Economic Damages.

(1) Urban.

(a) A total of 50 urban residential structures were flooded in this reach. The majority of the homes flooded were small frame structures, although some larger brick homes were inundated. Residents of the Willow Glen Road area reported having six inches of water in their homes for about two days. Similar flood depths and duration were reported by people living near Hynson Bayou and Chatlin Lake Canal, which are too small to drain large amounts of water, according to the residents affected.

(b) Again, although North 3rd Street, 15th Street and other streets with heavy commercial development were flooded, the water was confined to the streets, and no businesses were reported flooded. Two area schools were flooded. Peabody Magnet School, in Alexandria, and Carter C. Raymond Junior High, in Lecompte, received about \$27,000 and \$12,000 in damages, respectively, with flooding of four to six inches.

(c) In addition to residential structure damage, 12 vehicles with an average value of \$2,000 were reported damaged. Again, some homeowners suffered heavy damage to the contents of their homes, as they were unable to prevent water from coming in and did not have time to move furniture and other belongings.

(2) Rural Developed.

(a) There were no rural developed areas flooded in this reach.

(3) Agricultural.

(a) SCS and ASCS personnel estimated that 15,300 total acres of agricultural land were flooded, including 1,200 acres of wheat, 300 acres of soybeans, and 1,500 acres of improved pasture. About 80 head of cattle were relocated, with five head of cattle, and five hogs being lost. Parish officials and individual farmers were unable to provide cost estimates for crop damage, livestock relocation, supplemental feed, or repair and clean-up operations. GSRDC's agricultural economists estimated agricultural damages, based on data collected in other reaches and LSU crop budget data.

(4) Other

(a) As stated earlier, precise road and bridge damage figures were not available from Alexandria or Rapides Parish officials. Since Reach 1 of Eastern Rapides encompasses much of the city of Alexandria, damage estimates for the city's utilities, and other miscellaneous expenditures, must be regarded as representing the damages in Eastern Rapides, Reach 1.

(b) The city spent \$8,000 for repairing and replacing water meters, \$20,000 for repairs to the water intake and distribution system, and \$18,000 for checking and replacing damaged gas regulators. There was no damage to the city's power substations. About \$20,000 damage was done to Alexandria's wastewater treatment facilities, with the most serious damage being to the aerated lagoon levee and a lift station.

(c) South Central Bell officials, whose district includes Alexandria, Pineville, Sabine, Oakdale, Natchitoches, Marksville, and Vidalia, had total damage/repair costs of \$13 million. Within Reach 1 of Eastern Rapides, Bayou Cocodrie, Reach B, and Rapides Island, about \$2.5 million of this damage occurred. It was estimated that five percent of these damages occurred in Rapides Island, and 25 percent in Bayou Cocodrie, Reach B, leaving 70 percent for Eastern Rapides, Reach 1.

(d) Alexandria's city engineer reported that the city's expenditures included \$2,400 for evacuations, \$6,250 for sandbagging (12,500 sandbags at 50¢ each), \$10,260 for maintenance vehicles and labor crews, and \$4,150 for fire department pumping operations. As with utility damages, 70 percent of these expenditures, or about \$16,200 were estimated to have occurred in Eastern Rapides, Reach 1.

(e) The Red Cross estimates that \$132,000 were spent for mass care and direct family assistance to about 400 people forced to evacuate their homes.

d. Summary of Damages. Table 24 presents a disaggregated summary of damages in Eastern Rapides, Reach 1.

Table 24. Summary of Flood Damages--Eastern Rapides, Reach 1, December 1982 Flooding--Central and South Central Louisiana

Category	Damages (Dollars)
Urban	
Residential	\$ 634,000
Commercial	40,200
Other	-0-
Rural Developed	-0-
Agricultural	355,100
Government ^a	16,200
Transportation ^b	NA
Utilities ^c	1,796,000
Miscellaneous ^d	142,100
Total	\$2,983,600

NA = Not Available.

^a\$1,700 for evacuation, \$4,400 for sandbagging, \$7,195 for maintenance vehicles and crews (70 percent of city of Alexandria total), and \$2,900 for fire department pumping operations (70 percent of city of Alexandria total).

^bCity and Parish officials have not fully tabulated costs of repairing roads and bridges and were unable to estimate these costs.

^c70 percent of city of Alexandria total.

^dSpent for direct family assistance and mass care by the Red Cross and \$10,100 for damages to 12 vehicles.

15. Damage Appraisal--Eastern Rapides, Reach 2

a. General.

(1) Reach 2 of Eastern Rapides encompasses 37,800 total acres in Rapides and Avoyelles parishes, and extends southeastward from the Red River just east of Alexandria to a point just south of Bunkie. Bayou Bouef parallels Reach 2 on the west, and is roughly bounded by Louisiana Highways 1188 and 115 on the east. As Table 25 shows most of the acreage flooded in Reach 2 is used for agriculture, so that the bulk of Reach 2 flood damages were to crops and livestock.

Table 25. Summary of Acres Flooded--Eastern Rapides, Reach 2
December 1982 Flooding--Central and South Central Louisiana

Land Use	Area Inundated (Acres)
Urban	
Residential	-0-
Commercial	-0-
Rural Developed	-0-
Agricultural	17,500
Wooded	8,900
Other	-0-
Total	26,400

b. Areas Inundated.

(1) The worst flooding occurred in the central portion of Reach 2, on both sides of the Chatlin Lake Canal and Bayou du Lac. All of this land is used for agriculture, or is otherwise uninhabited and undeveloped.

(2) Table 25 shows acres flooded, by land use category.

c. Economic Damages.

(1) Urban.

(a) As stated above, flooding in Reach 2 inflicted the most damage to crops and livestock. No residential or non-residential flooding occurred, and no vehicles were reported damaged. Area residents did report heavy flooding of roads and bridges, with two feet of water remaining on some roads for as long as 12 days. Throughout most of Reach 2, however, flooding resulted primarily from the overflowing of small drainage ditches, and depth and duration of flooding in most areas was minimal.

(2) Rural Developed.

(a) No rural developed areas were flooded in this reach.

(3) Agricultural.

(a) ASCS and SCS officials estimated that a total of 17,500 agricultural acres was flooded, including 3,600 acres of wheat, 1,000 acres of soybeans, and 4,400 acres of improved pasture. About 250 cattle were relocated, and area farmers estimated that relocation costs, including supplemental feed and pasture, averaged \$8.00 per head for total relocation costs of \$2,000. About 20 head of cattle and 20 hogs were lost, along with

25 bee colonies. No cost estimates were available for agricultural repairs, clean-up, or other flood-related expenditures. GSRDC's agricultural economists estimated agricultural damages based on data collected in other reaches and LSU crop budget data.

(4) Other.

(a) Water remained on some Avoyelles Parish roads for nearly two weeks, causing about \$40,000 damage to roads and bridges. No damage to utilities was reported, and officials were unable to estimate local expenditures for evacuation or other emergency operations.

d. Summary of Damages. Table 26 presents total flood damages for Eastern Rapides, Reach 2.

Table 26. Summary of Flood Damages--Eastern Rapides, Reach 2, December 1982 Flooding--Central and South Central Louisiana

Category	Damages (Dollars)
Urban	
Residential	\$ -0-
Commercial	-0-
Other	-0-
Rural Developed	-0-
Agricultural	1,081,700
Government	-0-
Transportation ^a	40,000
Utilities ^b	-0-
Miscellaneous	-0-
Total	\$1,121,700

^aDamage to roads and bridges. Damage estimates not available for Rapides Parish at this time; damage estimate shown is for Avoyelles Parish.

^bUtilities report no significant damages.

16. Damage Appraisal--Eastern Rapides, Reach 3

a. General.

(1) Reach 3 contains approximately 69,000 acres, all of which are in Avoyelles Parish. Reach 3 is bounded by the Red River on the north, and

extends southward to a point just south of Mansura. Reach 3 parallels the Red River and Louisiana Highway 114 on the west, and reaches eastward to Bayou Lacombe, just east of Mansura. In addition to the town of Mansura, Reach 3 includes the town of Hessmer and the city of Marksville.

b. Areas Inundated.

(1) Most of the flooded Reach 3 acreage consists of agricultural land, fallow cleared land and/or forests. Flood damages were limited to crops, livestock and roads and bridges. The heaviest flooding occurred in agricultural land and woodlands in the central and lower central portions of Reach 3, near Bayou Choctaw.

(2) Table 27 shows total acres flooded, by land use category.

Table 27. Acres Flooded--Eastern Rapides, Reach 3,
December 1982 Flooding--Central and South Central Louisiana

Land Use	Area Inundated (Acres)
Urban	
Residential	-0-
Commercial	-0-
Rural Developed	-0-
Agricultural ^a	10,000
Wooded	2,800
Other	-0-
Total	12,800

^aIncluded 8,000 acres fallow land.

c. Economic Damages.

(1) Urban.

(a) No residential or non-residential flooding and no vehicle damages were reported in Reach 3, as Marksville, Mansura, Hessmer and other developed areas were not seriously threatened by the floodwaters.

(2) Rural Developed.

(a) No rural developed areas were flooded in this reach.

(3) Agricultural.

(a) Avoyelles Parish officials reported that, of the 10,000 agricultural acres flooded in Reach 3, 1,760 acres of improved pasture and 240 acres of wheat were inundated. About 80 head of cattle were relocated. No livestock were lost, and although area farmers were unable to estimate their expenditures for livestock relocation, or other agricultural losses, they termed these costs minimal. GSRDC's agricultural economists estimated these agricultural damages, based on data collected in other reaches and LSU crop budget data.

(4) Other.

(a) Avoyelles Parish officials estimated that about \$80,000 in damages was done to Reach 3 roads and bridges. Some roads remained underwater for as long as four weeks, and this \$80,000 figure could be revised upward. No other local expenditures were reported.

d. Summary of Damages. Table 28 presents summarized damages for Reach 3 of Eastern Rapides.

Table 28. Summary of Flood Damages--Eastern Rapides, Reach 3, December 1982 Flooding--Central and South Central Louisiana

Category	Damages (Dollars)
Urban	
Residential	\$ -0-
Commercial	-0-
Other	-0-
Rural Developed	-0-
Agricultural	222,400
Government	-0-
Transportation ^a	80,000
Utilities ^b	-0-
Miscellaneous	-0-
Total	\$302,400

^aDamage to roads and bridges.

^bUtilities report no significant damages.

17. Damage Appraisal--Eastern Rapides, Reach 4

a. General

(1) This reach contains approximately 27,300 acres in Avoyelles Parish, much of which is agricultural. Reach 4 is very narrow, bounded on the north by Louisiana Highway 114 and the Bayou des Glaisses levee system, on the south by Louisiana Highway 29 and bayous des Glaisses, Rouge and du Lac and on the west by Louisiana Highway 115, and extends as far east as the upper western border of the Pomme de Terre Wildlife Management Area. Bayou des Glaisses bisects much of Reach 4, which contains the small communities of Bordelonville, Borodino and Voorhies.

b. Areas Inundated.

(1) Nearly all of the areas flooded in Reach 4 are agricultural, with some bottomland hardwood along Bayou du Lac being inundated. Residential and commercial acreage, of which there is very little, received a minimal amount of flooding.

(2) Table 29 shows total acres flooded, by land use category.

Table 29. Acres Flooded--Eastern Rapides, Reach 4,
December 1982 Flooding--Central and South Central Louisiana

Land Use	Area Inundated (Acres)
Urban	
Residential	-0-
Commercial	-0-
Rural Developed	-0-
Agricultural ^a	2,900
Wooded	2,200
Other ^b	1,500
Total	6,600

^aIncludes 1,900 acres fallow land.

^bMarsh.

c. Economic Damages.

(1) Urban.

(a) No residential or non-residential structures were flooded in Reach 4; no residents were reported evacuated, and no damage was reported to

vehicles or other private or commercial property. No residents were reported to have been forced to move furniture or take other measures to minimize flooding.

(2) Rural Developed.

(a) No rural developed areas were flooded in this reach.

(3) Agricultural.

(a) An estimated 2,900 acres of agricultural lands were inundated, including 880 acres of improved pasture, and 120 acres of wheat. About 40 head of cattle were relocated. GSRDC estimated agricultural damages based on data collected in other reaches and LSU crop budget data.

(4) Other.

(a) As stated above, no evacuations or other emergency/relief operations were necessary. Parish officials reported that their major expense was \$40,000 for repair to roads and bridges, some of which were inundated from two to four weeks, at a depth of up to two feet.

d. Summary of Damages. Table 30 contains a summary of flood damages in Reach 4 of Eastern Rapides.

18. Damage Appraisal--Eastern Rapides, Reach 5

a. General.

(1) Reach 5 contains approximately 49,500 acres in Avoyelles Parish. It extends westward to Louisiana Highway 107, and eastward to the eastern limits of the West Atchafalaya Floodway. Reach 5 stretches nearly to Bordelonville on the north, and its southernmost portion reaches the point where Bayou Jack meets Trevassar Bayou. Reach 5 encompasses the towns of Cottonport, Plaquemine, and Moreauville.

b. Areas Inundated.

(1) Reach 5 flooding was confined mainly to agricultural lands in the central and south central portions. As a result, no structural flooding was reported, and none of the few towns in Reach 5 were threatened.

(2) Table 31 shows total acres flooded, by land use category.

Table 30. Summary of Flood Damages--Eastern Rapides, Reach 4,
December 1982 Flooding--Central and South Central Louisiana

Category	Damage (Dollars)
Urban	
Residential	\$ -0-
Commercial	-0-
Other	-0-
Rural Developed	-0-
Agricultural	111,200
Government	-0-
Transportation ^a	40,000
Utilities ^b	-0-
Miscellaneous	-0-
Total	\$151,200

^aDamage to roads and bridges.

^bUtilities report no significant damages.

Table 31. Acres Flooded--Eastern Rapides, Reach 5,
December 1982 Flooding--Central and South Central Louisiana

Land Use	Area Inundated (Acres)
Urban	
Residential	-0-
Commercial	-0-
Rural Developed	-0-
Agricultural ^a	8,500
Wooded	3,000
Other	
Total	11,500

^aIncludes 6,000 acres fallow land.

c. Economic Damages.

(1) Urban.

(a) No residential or non-residential flooding was reported. Vehicular damage was limited to one truck, valued at \$3,500, and there were no reports of evacuations, sandbagging or any other measures designed to prevent inundations or water damage.

(2) Rural Developed.

(a) No rural developed areas were flooded in this reach.

(3) Agricultural.

(a) Agricultural acreage flooded totaled 8,500 acres, including 2,300 acres of improved pasture and 200 acres of wheat. About 100 head of cattle were relocated, and no livestock were lost. No cost estimates were available for crop damage, clean-up, repairs, or other agricultural damages. GSRDC's agricultural economists estimated agricultural damages based on data collected in other reaches and LSU crop budget data.

(4) Other.

(a) With no structural inundation or evacuations necessary, no costs were incurred for mass care, assistance to families, or other emergency/relief operations. Parish officials estimated road and bridge damages at \$80,000.

d. Summary of Damages. Flood damages in Reach 5 are summarized in Table 32.

19. Damage Appraisal--Eastern Rapides, Reach 6

a. General.

(1) Reach 6 of Eastern Rapides consists of approximately 75,000 acres in Avoyelles and St. Landry parishes. The reach is bounded on the north and south by Bayou Rouge, on the west by Louisiana Highway 71, and on the east by Louisiana Highway 107. Most of the acreage is used for agriculture, with scattered tracts of woodlands near highways and streams.

b. Areas Inundated.

(1) Most of the flooding in Reach 6 occurred in uninhabited lands adjacent to Spring Bayou, Bayou Rouge, and Bayou Petite Prairie, in the south central and southwest portions of the reach. Residential and commercial development in the area is very limited, and most of the flood damage reported was agricultural in nature.

(2) Table 33 shows total acres flooded, by land use category.

Table 32. Summary of Flood Damages--Eastern Rapides, Reach 5,
December 1982 Flooding--Central and South Central Louisiana

Category	Damage (Dollars)
Urban	
Residential	\$ -0-
Commercial	-0-
Other	-0-
Rural Developed	-0-
Agricultural	275,800
Government	-0-
Transportation ^a	80,000
Utilities ^b	-0-
Miscellaneous ^c	1,900
Total	\$357,700

^aDamage to roads and bridges.

^bUtilities report no significant damages.

^cDamage to one vehicle (pick-up truck).

Table 33. Acres Flooded--Eastern Rapides, Reach 6,
December 1982 Flooding--Central and South Central Louisiana

Land Use	Area Inundated (Acres)
Urban	
Residential	-0-
Commercial	-0-
Rural Developed	-0-
Agricultural ^a	32,600
Wooded	5,900
Other ^b	2,300
Total	40,800

^aIncludes about 30,900 acres of fallow land.

^bMarsh.

c. Economic Damages.

(1) Urban.

(a) No structures were inundated in Reach 6, and no vehicles were damaged. No residents were forced to evacuate their homes, although a few left voluntarily and stayed with relatives until the threat of flooding was over. No furniture or other personal belongings were reported damaged, although no residents or businesses reported taking steps to prevent or minimize flooding.

(2) Rural Developed.

(a) No rural developed areas were flooded in this reach.

(3) Agricultural.

(a) Approximately 32,600 acres of agricultural lands were flooded, including 200 acres of native pasture and 1,500 of improved pasture, which were underwater for 18-20 days. A small amount of wheat, about 40 acres, was also flooded.

(b) About 50 head of cattle were relocated, but the minimal costs for relocation were unavailable. No livestock was lost. Private farmers who suffered agricultural losses were unable to provide cost estimates for any flood damages, repairs or clean-up operations. GSRDC's agricultural economists estimated agricultural damages based on data collected in other reaches and LSU crop budget data.

(4) Other.

(a) Again, no evacuations were necessary, and therefore no costs for emergency operations, family assistance or mass care were incurred. Parish officials estimated that \$15,900 damage was done to roads and bridges in Reach 6.

d. Summary of Damages. Table 34 provides a summary of flood damages in Eastern Rapides, Reach 6.

20. Damage Appraisal--Eastern Rapides, Reach 7

a. General.

(1) Reach 7 encompasses approximately 40,300 acres in St. Landry Parish. The reach is bounded by Bayou Rouge on the north, and extends southward to Bayou Courtableau, in the vicinity of Port Barre. Bayou Wauksha borders Reach 7 on the west, and the West Atchafalaya Basin Protection Levee forms the eastern boundary. The towns of Port Barre, Palmetto, and Lebeau are the largest communities in Reach 7.

Table 34. Summary of Flood Damages--Eastern Rapides, Reach 6,
December 1982 Flooding--Central and South Central Louisiana

Category	Damage (Dollars)
Urban	
Residential	\$ -0-
Commercial	-0-
Other	-0-
Rural Developed	-0-
Agricultural	181,600
Government	-0-
Transportation ^a	15,900
Utilities ^b	-0-
Miscellaneous	-0-
Total	\$197,500

^aDamage to roads and bridges.

^bUtilities report no significant damages.

b. Areas Inundated.

(1) Most of the flooding in Reach 7 occurred in agricultural lands and woodlands in the south central and southwestern portions of the reach. Residential flooding was reported only in Port Barre, as described below.

(2) Table 35 shows total acres flooded by land use category.

c. Economic Damages.

(1) Urban.

(a) Six frame houses along Bayou Courtableau in the center of Port Barre (Front and Courtableau streets on either side of the bayou) were inundated. These homes averaged 1,750 square feet in size, and were inundated an average of two feet for 18-21 days. Estimated value per house was approximately \$22,000.

(b) Most residents whose homes were flooded were able to move or raise their furniture to minimize damage. A number of people complained that the high water levels in the Teche-Vermilion freshwater diversion system retard the drainage of excess run-off water in the area.

Table 35. Acres Flooded--Eastern Rapides, Reach 7,
December 1982 Flooding--Central and South Central Louisiana

Land Use	Area Inundated (Acres)
Urban	
Residential	10
Commercial	-0-
Rural Developed	-0-
Agricultural ^a	12,000
Wooded	8,100
Other ^b	2,100
Total	22,210

^aIncludes 9,200 acres fallow land.

^bMarsh.

(c) No commercial or other non-residential structures were reported inundated, and no reports of vehicular damage were received.

(2) Rural Developed.

(a) No rural developed lands were flooded in this reach.

(3) Agricultural.

(a) A total of approximately 12,000 agricultural acres was inundated in Reach 7. This total includes 400 acres of native pasture, 2,200 acres of improved pasture, and 160 acres of wheat. In addition, about 8,000 acres of woodlands were flooded and 2,000 acres of marsh.

(b) Parish officials estimated that about 150 head of cattle were relocated. However, the owner of these cattle was unable to estimate his relocation costs. No figures were available on other agricultural damages or expenses incurred. GSRDC's agricultural economists estimated these costs, based on data collected in other reaches and LSU crop budget data.

(4) Other.

(a) St. Landry Parish officials estimated that \$52,800 damages were done to Reach 7 roads and bridges. This figure includes labor, materials and administrative costs. The American Red Cross reported providing direct family assistance to nine families, at a total cost of about \$600.00. No parish figures for evacuation operations, damages to utilities, etc. were reported.

d. Summary of Damages. Table 36 contains summarized damage data for Eastern Rapides, Reach 7.

Table 36. Summary of Flood Damages--Eastern Rapides, Reach 7, December 1982 Flooding--Central and South Central Louisiana

Category	Damage (Dollars)
Urban	
Residential	\$ 80,100
Commercial	-0-
Other	-0-
Rural Developed	-0-
Agricultural	303,800
Government	-0-
Transportation ^a	52,800
Utilities ^b	-0-
Miscellaneous ^c	600
Total	\$437,300

^aDamage to roads and bridges.

^bUtilities report no significant damages.

^cRed Cross costs and expenditures for mass care.

21. Damage Appraisal--Eastern Rapides, Reach 8

a. General.

(1) This reach consists of a very narrow strip of land, with total acreage of about 8,200 acres in St. Landry and St. Martin parishes. Reach 8 stretches southward from U.S. Highway 190 near Courtableau to Interstate 10, just north of Lenora in St. Martin Parish. Reach 8 is bounded on the west by several small levee systems along bayous Portage and Chenevert, and Bayou Courtableau Diversion Canal. The West Atchafalaya Basin Protection Levee forms the eastern boundary.

b. Areas Inundated.

(1) Flooding in Reach 8 was confined largely to agricultural acreage in the southern portion of the reach. Approximately 4,000 acres were underwater for several days. The area is mostly unimproved pasture land. None of the very few structures in the area were reported flooded.

(2) Table 37 shows total acres flooded, by land use and category.

Table 37. Acres Flooded--Eastern Rapides, Reach 8,
December 1982 Flooding--Central and South Central Louisiana

Land Use	Area Inundated (Acres)
Urban	
Residential	-0-
Commercial	-0-
Rural Developed	-0-
Agricultural	3,000
Wooded	1,000
Other	-0-
Total	4,000

c. Economic Damages.

(1) Urban.

(a) Since no residential or non-residential structures were reported flooded, no damages were incurred. No evacuations were necessary, no vehicles were reported damaged, and no residents reported sandbagging, moving belongings, or otherwise taking steps to minimize flood damages.

(2) Rural Developed.

(a) No rural developed areas were flooded in this reach.

(3) Agricultural.

(a) No crops were reported damaged, no livestock were lost or relocated, and no expenditures for agricultural repairs, clean-up, or other expenses were reported. However, estimated damages to 3,000 acres of unimproved pasture totaled about \$105,500 (based on information from other reaches and LSU crop budget data).

(4) Other.

(a) With no structural inundation or evacuations, no expenditures were reported for mass care, direct family assistance, or other emergency operations. Parish officials reported no damages to Reach 8 roads and bridges.

d. Summary of Damages. Table 38 reflects the minimal damages reported in Reach 8.

22. Damage Appraisal--Eastern Rapides, Reach 9

(a) General.

(1) Reach 9 encompasses approximately 27,300 total acres in St. Martin Parish, and stretches from Interstate 10 around Lenora to as far to the southeast as Catahoula. It is bounded on the east by the West Atchafalaya Basin Protection Levee and on the west parallels Louisiana highways 349 and 3039.

b. Areas Inundated.

(1) Flooding in Reach 9 was confined largely to marsh and agricultural acreage in the southern and southwestern portions of the reach. Much of the area inundated in Reach 9 is composed of marsh, so that no structural damage was reported, and agricultural damage was minimal.

(2) Table 39 shows total acres flooded, by land use category.

Table 38. Summary of Flood Damages--Eastern Rapides, Reach 8,
December 1982 Flooding--Central and South Central Louisiana

Category	Damage (Dollars)
Urban	
Residential	\$ -0-
Commercial	-0-
Other	-0-
Rural Developed	-0-
Agricultural	105,500
Government	-0-
Transportation ^a	-0-
Utilities ^b	-0-
Miscellaneous	-0-
Total	\$105,500

^aDamage to roads and bridges.

^bUtilities report no significant damages.

Table 39. Acres Flooded--Eastern Rapides, Reach 9,
December 1982 Flooding--Central and South Central Louisiana

Land Use	Area Inundated (Acres)
Urban	
Residential	-0-
Commercial	-0-
Rural Developed	-0-
Agricultural ^a	300
Wooded ^b	--
Other ^c	2,700
Total	3,000

^aIncludes 100 acres fallow land.

^bUnable to distinguish between wooded and marsh in this reach.

^cPrimarily marsh.

c. Economic Damages.

(1) Urban.

(a) No residential or non-residential structural damage was reported. No vehicular damages were recorded, and no residents were reported to have been evacuated or to have moved furniture or other belongings.

(2) Rural Developed.

(a) No rural developed areas were flooded in this reach.

(3) Agricultural.

(a) Fifty acres of wheat were reported inundated, along with 150 acres of sugarcane. All sugarcane had been harvested prior to the floods, but parish officials and farmers were unable to say whether or not future sugarcane crops would be damaged by the inundation. No livestock were reported lost or relocated, and neither parish officials nor farmers were able to provide cost estimates for the minimal agricultural damages which did occur. GSRDC's agricultural economists estimated agricultural damages, based on data collected in other reaches and LSU crop budget data.

(4) Other.

(a) Parish officials had developed no cost estimates for road and bridge damages at the time of the survey. These damages were expected to be minimal. Since no evacuations or other emergency/relief operations were conducted in Reach 9, no state or local expenditures were made.

d. Summary of Damages. Table 40 presents a summary of flood damages in Eastern Rapides, Reach 9.

Table 40. Summary of Flood Damages--Eastern Rapides, Reach 9
December 1982 Flooding--Central and South Central Louisiana

Category	Damage (Dollars)
Urban	
Residential	\$ -0-
Commercial	-0-
Other	-0-
Rural Developed	-0-
Agricultural	5,700
Government	-0-
Transportation ^a	NA
Utilities ^b	-0-
Miscellaneous	-0-
Total	\$5,700

NA = Not available.

^aDamage to roads and bridges.

^bUtilities report no significant damages.

23. Damage Appraisal--Eastern Rapides, Reach 10

a. General.

(1) Reach 10 encompasses about 82,500 acres in St. Martin, Iberia, and St. Mary parishes. The majority of this acreage is made up of oil and gas fields, woodlands, marsh, open water, and some agricultural lands, particularly sugarcane fields and crawfish ponds.

(2) On the north, Reach 10 begins just southeast of Catahoula, in St. Martin Parish. Reach 10 stretches through Iberia and St. Mary parishes, as far south as the Chitimacha Indian Reservation, just north of Charenton. The reach is bounded on the east by the West Atchafalaya Basin Protection Levee, and on the west, roughly parallels Louisiana highways 96 and 345.

b. Areas Inundated.

(1) Officials in St. Martin Parish advised GSRDC's survey team that no parish lands in Reach 10 flooded. In St. Mary Parish, Reach 10 flooding was confined to oil and gas fields and pastureland in the Cotton Canal area.

(2) Table 41 shows total acres flooded, by land use category.

Table 41. Acres Flooded--Eastern Rapides, Reach 10,
December 1982 Flooding--Central and South Central Louisiana

Land Use	Area Inundated (Acres)
Urban	
Residential	-0-
Commercial	-0-
Agricultural ^a	500
Wooded ^b	--
Other ^c	27,000
Total	27,500

^aIncludes 250 acres fallow land.

^bUnable to distinguish between wooded and marsh in this reach.

c. Economic Damages

(1) Urban.

(a) Interviews with parish officials, including the Civil Defense directors of all three parishes, indicated that no structural flooding occurred in Reach 10. This was confirmed by area residents, who said that there was some flooding of roads in outlying areas, but water did not get into any houses. Throughout the reach the heaviest flooding occurred in uninhabited areas, e.g., marshes, fields and crawfish ponds in the vicinity of Lake Fausse Pointe. Some sandbagging was done in rural residential areas, but no residents were forced to leave their homes or move their belongings. No vehicles were reported damaged.

(2) Rural Developed.

(a) No rural developed areas were flooded in this reach.

(3) Agricultural.

(a) SCS and ASCS officials were interviewed in all three parishes, and reported only minimal agricultural flood damages through Reach 10. About 200 acres of sugarcane and 50 acres of wheat were flooded; the sugarcane had already been harvested, and neither parish officials nor farmers were able to say whether or not future crops would be affected.

(b) About 50 head of cattle were relocated. The owner of these cattle feared that his pasture may be full of weeds once the water subsides. No other costs for agricultural damages, repairs, or clean-up were reported. GSRDC's agricultural economists estimated agricultural damages, based on data collected in other reaches and LSU crop budget data.

(4) Other.

(a) Again, no Reach 10 residents were evacuated. At the time of the survey, officials in all three Reach 10 parishes were unable to provide cost estimates for damages to Reach 10 roads and bridges. They did point out, however, that many of the roads that were flooded were rural dirt roads in uninhabited areas. No repairs to these roads were anticipated; instead, officials simply expected them to drain slowly, and dry out so that they would be passable once again.

d. Summary of Damages. Table 42 contains summarized damages for Eastern Rapides, Reach 10.

Table 42. Summary of Flood Damages--Eastern Rapides, Reach 10, December 1982 Flooding--Central and South Central Louisiana

Category	Damage (Dollars)
Urban	
Residential	\$ -0-
Commercial	-0-
Other	-0-
Rural Developed	-0-
Agricultural	27,400
Government	-0-
Transportation ^a	NA
Utilities ^b	-0-
Miscellaneous	-0-
Total	\$27,400

NA = Not Available.

^aDamage to roads and bridges.

^bUtilities report no significant damages.

24. Summary--Eastern Rapides Area

a. Table 43 presents a summary of acres flooded in the Eastern Rapides area, by reach.

Table 43. Summary of Areas Inundated, by Reach, Eastern Rapides Area
December 1982 Flooding, Central and South Central Louisiana

Reach	Urban (Acres)	Agricultural (Acres)	Wooded (Acres)	Other (Acres)	Total (Acres)
1	900	15,300	8,700	-0-	24,900
2	-0-	17,500	8,900	-0-	26,400
3	-0-	10,000	2,800	-0-	12,800
4	-0-	2,900	2,200	1,500	6,600
5	-0-	8,500	3,000	-0-	11,500
6	-0-	32,600	5,900	2,500	40,800
7	10	12,000	8,100	2,100	22,210
8	-0-	3,000	1,000	-0-	4,000
9	-0-	300	-0-	2,700	3,000
10	-0-	500	-0-	27,000	27,500
TOTAL	910	102,600	40,600	35,600	179,710
ROUNDED	900	102,600	40,600	35,600	179,700

b. Table 44 presents a disaggregated summary of damages, by reach, for the Eastern Rapides area.

25. Casualties.

a. Although at least six flood-related deaths were reported statewide, no known fatalities occurred within the study area.

26. Damage Summary.

a. Table 45 contains summarized data, by reach, for total damages due to the December 1982 flooding in central and south central Louisiana. The estimated damages for the project area totaled \$15,702,100.

b. The total area inundated in the study area is shown, by reach, in Table 46. Of the estimated 380,500 acres flooded, 69 percent was agricultural lands, 21 percent was wooded areas, and 10 percent was marsh. Urban and rural developed areas made up less than one percent of the total acreage.

Table 44. Summary of Total Estimated Damages, by Reach, Eastern Rapides Area
December 1982 Flooding in Central and South Central Louisiana
(Dollars)

Reach Losses	Urban and Rural			Total	Agricultural	Government	Transportation	Utilities	Miscellaneous	Total
	Residential	Commercial	Other							
Reach 1	634,000	40,200	-0-	674,200	355,100	16,200	NA	1,796,000	142,100	2,983,600
Reach 2	-0-	-0-	-0-	-0-	1,081,700	-0-	40,000	-0-	-0-	1,121,700
Reach 3	-0-	-0-	-0-	-0-	222,400	-0-	80,000	-0-	-0-	302,400
Reach 4	-0-	-0-	-0-	-0-	111,200	-0-	40,000	-0-	-0-	151,200
Reach 5	-0-	-0-	-0-	-0-	275,800	-0-	80,000	-0-	1,900	357,700
Reach 6	-0-	-0-	-0-	-0-	181,600	-0-	15,900	-0-	-0-	197,500
Reach 7	80,100	-0-	-0-	80,100	303,800	-0-	52,800	-0-	600	437,300
Reach 8	-0-	-0-	-0-	-0-	105,500	-0-	-0-	-0-	-0-	105,500
Reach 9	-0-	-0-	-0-	-0-	5,700	-0-	-0-	-0-	-0-	5,700
Reach 10	-0-	-0-	-0-	-0-	27,400	-0-	NA	-0-	-0-	27,400
Estimated Damages:										
TOTAL	714,100	40,200	-0-	754,300	2,670,200	16,200	308,700	1,796,000	144,600	5,690,000

Table 45. Summary of Total Estimated Damages, by Reach
December 1982 Flooding in Central and South Central Louisiana
(Dollars)

Reach Losses	Urban and Rural				Agricultural	Government	Transportation	Utilities	Miscellaneous	Total
	Residential	Commercial	Other	Total						
Aloha-Rigolette, Bayou Rigolette Reach	92,700	-0-	-0-	92,700	1,925,600	-0-	99,400	-0-	-0-	2,087,700
Aloha-Rigolette, Bayou Du Grappe Reach	123,700	-0-	-0-	123,700	375,000	-0-	13,100	-0-	-0-	477,300
Rapides Island	2,355,700	-0-	-0-	2,355,700	527,700	1,700	100,000	128,000	15,000	3,128,100
Bayou Cocodrie, Reach B	1,391,400	315,500	-0-	1,706,900	1,016,300	5,100	NA	642,000	15,000	3,385,300
Bayou Cocodrie, Reach D	171,900	6,900	-0-	178,800	271,600	2,000	195,000	-0-	4,800	652,200
Bayou Cocodrie, Reach I	-0-	-0-	-0-	-0-	68,000	-0-	100,000	-0-	-0-	168,000
Bayou Cocodrie, Reach K	-0-	-0-	-0-	-0-	40,800	-0-	26,400	-0-	-0-	67,200
Bayou Cocodrie, Reach M	-0-	-0-	-0-	-0-	36,300	-0-	10,000	-0-	-0-	46,300
Eastern Rapides, Reach 1	634,000	40,200	-0-	674,200	355,100	16,200	NA	1,796,000	142,100	2,983,600
Eastern Rapides, Reach 2	-0-	-0-	-0-	-0-	1,081,700	-0-	40,000	-0-	-0-	1,121,700
Eastern Rapides, Reach 3	-0-	-0-	-0-	-0-	222,400	-0-	80,000	-0-	-0-	302,400
Eastern Rapides, Reach 4	-0-	-0-	-0-	-0-	111,200	-0-	40,000	-0-	-0-	151,200
Eastern Rapides, Reach 5	-0-	-0-	-0-	-0-	275,800	-0-	80,000	-0-	1,900	357,700
Eastern Rapides, Reach 6	-0-	-0-	-0-	-0-	181,600	-0-	15,900	-0-	-0-	197,500
Eastern Rapides, Reach 7	80,100	-0-	-0-	80,100	303,800	-0-	52,800	-0-	600	437,300
Eastern Rapides, Reach 8	-0-	-0-	-0-	-0-	105,500	-0-	-0-	-0-	-0-	105,500
Eastern Rapides, Reach 9	-0-	-0-	-0-	-0-	5,700	-0-	-0-	-0-	-0-	5,700
Eastern Rapides, Reach 10	-0-	-0-	-0-	-0-	27,400	-0-	NA	-0-	-0-	27,400
TOTAL	4,349,500	362,600	-0-	5,212,100	6,887,000	25,000	832,600	2,566,000	179,400	15,702,100

Table 46. Summary of Areas Inundated, by Reach
December 1982 Flooding in Central and South Central Louisiana

Reach	Rural				Total (Acres)
	Urban (Acres)	Developed (Acres)	Agricultural (Acres)	Wooded (Acres)	
Aloha-Rigolette, Bayou Rigolette Reach	-0-	10	27,600	3,200	30,800
Aloha-Rigolette, Bayou Du Grappe Reach	50	-0-	9,100	3,400	12,950
Rapides Island	10	-0-	15,200	1,600	16,810
Bayou Cocodrie, Reach B	170	-0-	23,080	4,100	27,350
Bayou Cocodrie, Reach D	-0-	10	21,100	6,800	28,900
Bayou Cocodrie, Reach I	-0-	-0-	37,500	13,600	51,100
Bayou Cocodrie, Reach K	-0-	-0-	24,400	5,600	30,100
Bayou Cocodrie, Reach M	-0-	-0-	1,700	800	2,800
Eastern Rapides, Reach 1	900	-0-	15,300	8,700	24,900
Eastern Rapides, Reach 2	-0-	-0-	17,500	8,900	26,400
Eastern Rapides, Reach 3	-0-	-0-	10,000	2,800	12,800
Eastern Rapides, Reach 4	-0-	-0-	2,900	2,200	6,600
Eastern Rapides, Reach 5	-0-	-0-	8,500	3,000	11,500
Eastern Rapides, Reach 6	-0-	-0-	32,600	5,900	40,800
Eastern Rapides, Reach 7	-0-	-0-	12,000	8,100	22,200
Eastern Rapides, Reach 8	-0-	-0-	3,000	1,000	4,000
Eastern Rapides, Reach 9	-0-	-0-	300	-0-	3,000
Eastern Rapides, Reach 10	-0-	-0-	500	-0-	27,500
TOTAL	1,130	20	262,380	79,700	380,530
ROUNDED	1,110	20	262,400	79,700	38,500

c. The survey team made every effort to obtain either damage estimates or a basis for calculating damage estimates for all categories of flood damages for each reach or area surveyed. However, in categories such as cost to state and local governments, utilities, and to a lesser degree costs for repairing roads and bridges neither cost estimates nor a basis for cost estimates could be obtained in all cases. Damage estimates included in this report were restricted to either quoted damages or damages that could be estimated with an acceptable degree of accuracy.

Appendix A
RESIDENTIAL AND COMMERCIAL
DAMAGE CALCULATIONS

Table A-1. Rural Residential Structures Inundated, Aloha-Rigolette, Bayou Rigolette Reach

Number of Stories	Type	Approximate Sq. Ft.	Approximate Value (Dollars)	Approximate Depth (Feet)	Approximate Duration (Days)	Approximate Damages Per Structure	Approximate Value of Contents Per Structure	Approximate Damages to Contents Per Structure	Number of Structures	Approximate Total Damages
1	Wood	1,500	32,806	0.5	2	6,135	19,684	2,264	2	16,798
1	Wood	2,700	59,050	0.5	2	11,042	35,430	4,074	1	15,116
1	Mobile Home	1,000	16,954	1.0	3	13,021	10,172	2,187	4	60,832
TOTAL									7	92,746

Table A-2. Urban Residential Structures Inundated, Aloha-Rigolette, Bayou Du Grappe Reach

Number of Stories	Type	Approximate Sq. Ft.	Approximate Value (Dollars)	Approximate Depth (Feet)	Approximate Duration (Days)	Approximate		Approximate		Number of Structures	Approximate Total Damages
						Approximate Damages Per Structure	Value of Contents Per Structure	Approximate Damages to Contents Per Structure	Value of Contents Per Structure		
1	Brick	1,500	42,865	0.5	2	8,016	25,719	2,958	10,914	1	10,914
1	Brick	1,700	48,580	0.5	3	9,084	29,148	3,352	67,186	5	67,186
1	Brick	2,300	65,726	0.5	3	12,291	39,436	4,535	16,826	1	16,826
1	Wood/Brick	1,000	25,224	0.5	2	4,717	15,134	1,740	6,457	1	6,457
1	Wood/Brick	1,750	46,967	0.5	2	8,783	28,180	3,241	12,024	1	12,024
1	Mobile Home	1,000	16,954	1.0	3	13,021	10,172	2,187	15,208	1	15,208
TOTAL										10	123,669

Table A-3. Urban Residential Structures Inundated, Rapides Island Area

Number of Stories	Type	Approximate Sq. Ft.	Approximate Value (Dollars)	Approximate Depth (Feet)	Approximate Duration (Days)	Approximate Damages Per Structure	Approximate Value of Contents Per Structure	Approximate Damages to Contents Per Structure	Number of Structures	Approximate Total Damages
1	Brick	3,200	93,024	1.0	5	24,186	55,814	12,000	50*	1,809,300
1	Brick	1,500	49,590	0.5	5	9,273	29,754	3,422	20	253,900
1	Brick	1,300	42,978	0.5	5	8,037	25,787	2,966	18	198,054
1	Brick	1,700	56,202	0.5	5	10,510	33,721	3,878	3	43,164
1	Brick	2,250	74,385	0.5	5	13,910	44,631	5,133	2	38,086
1	Wood	2,000	51,351	0.5	5	9,603	30,811	3,543	1	13,146
TOTAL										2,355,650

*Four units of 800 square feet per unit in each structure. 200 units or 50 structures flooded.

Table A-4. Urban Residential Structures Inundated, Bayou Cocodrie, Reach B

Number of Stories	Type	Approximate Sq. Ft.	Approximate Value (Dollars)	Approximate Depth (Feet)	Approximate Duration (Days)	Approximate Damages Per Structure	Approximate Value of Contents Per Structure	Approximate Damages to Contents Per Structure	Number of Structures	Approximate Total Damages
1	Brick	1,750	57,855	0.5	8	10,819	34,713	3,992	4	59,244
1	Brick	1,250	41,325	0.5	8	7,728	24,795	2,851	5	52,895
1	Wood/ Brick	1,300	38,178	0.5	10	7,139	22,907	2,634	3	29,319
1	Wood/ Brick	1,300	38,178	0.5	12	7,139	22,907	2,634	14	136,822
1	Brick	1,200	39,672	0.5	8	7,418	23,803	2,737	3	30,465
1	Brick	1,200	39,672	0.5	10	7,418	23,803	2,737	13	132,015
1	Brick	1,750	57,855	0.5	14	10,819	34,713	3,992	40	592,440
1	Brick	2,750	90,915	0.5	6	17,001	54,549	6,273	5	116,370
1	Brick	1,800	59,508	0.5	8	11,128	35,705	4,106	1	15,234
1	Brick	2,750	90,915	0.5	12	17,001	54,549	6,273	7	162,918
1	Wood	800	20,541	0.5	14	3,841	12,325	1,417	1	5,231
1	Wood	1,200	30,811	0.5	8	5,762	18,487	2,126	1	7,888
1	Wood	1,500	38,513	0.5	14	7,202	23,108	2,657	1	9,859
1	Wood	1,800	46,216	1.0	14	12,016	27,730	5,962	1	17,978
1	Metal	1,800	16,869	0.5	10	3,155	10,121	1,164	1	4,319
1	Wood	1,000	25,676	0.5	12	7,419	15,406	1,772	2	18,382
TOTAL									102	1,391,379

Table A-5. Urban Commercial Structures Inundated, Bayou Cocodrie, Reach B

Number of Stories	Type	Category	Approximate Sq. Ft.	Approximate Value (Dollars)	Approximate Depth (Feet)	Approximate Duration (Days)	Approximate Damages			Approximate Value of Contents/Structure	Approximate Damages to Contents/Structure	Number of Structures	Approximate Total Damages
							Per Structure	Structure	Structure				
1	Brick	Public Gathering Place ^a	3,500	201,500	0.5	12	9,874	48,360	1,934	1	11,808		
1	Brick	Public Gathering Place ^a	5,500	316,600	0.5	12	15,513	75,984	3,039	1	18,552		
1	Metal	Business Services ^b	500	6,665	1.0	10	573	7,531	1,807	1	2,380		
1	Wood	Eating & Drinking Establishment	750	20,600	0.5	10	1,009	21,012	630	1	1,639		
1	Wood	Contractor Operations	1,250	15,613	2.0	12	2,233	15,145	4,998	1	7,231		
1	Brick	Public Gathering Place ^c	1,250	37,100	1.5	14	4,415	8,904	953	1	5,368		
1	Metal	Business Services	1,250	16,664	0.5	10	816	18,164	2,543	1	3,359		
1	Metal	Contractor Operations	3,500	46,655	1.5	14	5,552	45,255	12,219	1	17,771		
1	Brick	Business Services ^d	4,500	66,105	1.5	10	7,866	-- ^d	-- ^d	1	7,866		
1	Metal	Miscellaneous ^e	5,500	137,280	3.5	14	26,770	149,635	80,803	1	107,573		
1	Brick	Eating & Drinking Establishment	5,500	181,390	1.5	14	21,585	185,018	44,404	2	131,978		
TOTAL												12	315,525

^a Church^b Nursery^c Lions Clubhouse^d Motel--out of business; no contents in building; therefore, no contents value or damages will be shown.^e Retail store

Table A-6. Rural Residential Structures Inundated, Bayou Cocodrie, Reach D

Number of Stories	Type	Approximate Sq. Ft.	Approximate Value (Dollars)	Approximate Depth (Feet)	Approximate Duration (Days)	Approximate Damages Per Structure	Approximate Value of Contents Per Structure	Approximate Damages to Contents Per Structure	Number of Structures	Approximate Total Damages
1	Mobile Home	500	9,419	2	5	8,665	5,651	2,243	1	10,908
1	Wood	2,000	43,788	4	8	21,018	26,273	16,210	1	37,228
1	Wood	1,200	26,249	3	10	11,287	15,749	8,268	1	19,555
1	Wood	1,800	39,367	2.5	7	15,904	23,620	11,054	1	26,958
1	Wood	1,300	28,432	2	14	10,435	17,059	6,772	1	17,207
1	Wood	1,400	30,619	3	7	13,166	18,371	9,645	1	22,811
1	Wood	1,100	24,058	3.5	12	10,970	14,435	8,300	1	19,270
1	Wood (camp)	1,100	20,214	4.5	14	10,067	12,128	7,859	1	17,926
TOTAL									8	171,863

Table A-7. Rural Commercial Structures Inundated, Bayou Cocodrie, Reach D

Number of Stories	Category	Approximate Sq. Ft.	Approximate Value (Dollars)	Approximate Depth (Feet)	Approximate Duration (Days)	Approximate Damages Per Structure	Approximate Value of Contents Per Structure	Approximate Damages to Contents Per Structure	Number of Structures	Approximate Total Damages
1	Public Gathering Place*	1,200	39,650	2	Unk	5,670	9,516	1,256	1	6,926

Unk = Unknown

*Church

Table A-8. Urban Residential Structures Inundated, Eastern Rapides, Reach 1

Number of Stories	Type	Approximate Sq. Ft.	Approximate Value (Dollars)	Approximate Depth (Feet)	Approximate Duration (Days)	Approximate Damages Per Structure	Approximate Value of Contents Per Structure	Approximate Damages to Contents Per Structure	Number of Structures	Approximate Total Damages
1	Wood	1,200	30,811	1.0	2.5	8,011	18,487	3,975	5	59,930
1	Brick	1,400	35,946	1.0	2.5	9,346	21,568	4,616	1	13,962
1	Wood	1,000	25,676	1.0	5	6,676	15,406	3,312	19	189,772
1	Wood	1,300	33,378	0.5	2	6,242	20,027	2,303	8	68,360
1	Brick	1,300	42,978	1.0	3	11,174	25,787	5,544	13	217,334
1	Brick	1,000	33,060	1.0	5	8,596	19,836	4,265	4	51,444
TOTAL									50	600,802

Table A-9. Urban Commercial Structures Inundated, Eastern Rapides, Reach 1

Number of Stories	Category	Approximate Sq. Ft.	Approximate Value (Dollars)	Approximate Depth (Feet)	Approximate Duration (Days)	Approximate Damages Per Structure	Approximate Value of Contents Per Structure	Approximate Damages to Contents Per Structure	Number of Structures	Approximate Total Damages
1	Public Gathering Places*	10,000	472,000	0.5	2	23,128	113,280	4,531	1	27,659
1	Public Gathering Places*	6,500	213,785	0.5	2	10,475	51,308	2,052	1	12,527
TOTAL									2	40,186

*Schools (gymnasiums flooded)

Table A-10. Urban Residential Structures Inundated, Eastern Rapides, Reach 7

Number of Stories	Type	Approximate Sq. Ft.	Approximate Value (Dollars)	Approximate Depth (Feet)	Approximate Duration (Days)	Approximate Damages Per Structure	Approximate Value of Contents Per Structure	Approximate Damages to Contents Per Structure	Number of Structures	Approximate Total Damages
1	Wood	1,200	22,056	2.0	18	8,095	13,234	5,254	6	80,094

Appendix B

MARSHALL VALUATION SERVICE--
REPLACEMENT COST ESTIMATES
DECEMBER 1982 FLOOD INVESTIGATION,
CENTRAL AND SOUTH CENTRAL LOUISIANA

Appendix B

MARSHALL VALUATION SERVICE--REPLACEMENT COST ESTIMATES
DECEMBER 1982 FLOOD INVESTIGATION,
CENTRAL AND SOUTH-CENTRAL LOUISIANA

Single Family Residences

A vast majority of the homes surveyed belonged in two construction classes: "C" and "D". Marshall Valuation Service describes these classes as follows:

Class C

Frame--Masonry or concrete load-bearing walls with or without pilasters. Masonry or concrete walls with steel, wood, or concrete frame.

Floor--Wood or concrete plank on steel floor joists, or concrete slab on grade.

Roof--Wood or steel joists with wood or steel deck. Concrete plank.

Walls--Brick, concrete block, or tile masonry, tilt-up, formed concrete, curtain walls.

Class D

Frame--Wood or steel studs in bearing wall, wood frame, primarily combustible construction.

Floor--Wood or steel floor joists or concrete slab on grade.

Roof--Wood or steel joists with wood or steel deck.

Walls--Almost any material except masonry or concrete. Generally combustible construction.

The class "C" homes surveyed were judged to fall under four types (low cost, fair, average and good). The national December 1981 per square foot costs were as follows:

- . Low cost - \$25.88/square foot
- . Fair - \$30.34/square foot
- . Average - \$35.10/square foot
- . Good - \$46.30/square foot

Class "D" figures were as follows:

- . Cheap - \$19.51/square foot
- . Low cost - \$23.22/square foot

- . Fair - \$27.26/square foot
- . Average - \$31.47/square foot
- . Good - \$40.55/square foot

A 1.002 correcting factor (December 1981 to January 1983) was used for the central district of the country, which includes the study area. Local multipliers were then applied to these (and other structures) figures. Alexandria has a multiplier of 0.94. This multiplier was applied throughout the study area, as most of the dwellings damaged were in the Alexandria vicinity. The corrected numbers for residential structures are as follows:

<u>Type</u>	<u>Class "C"</u>	<u>Class "D"</u>
Cheap	--	\$18.38/square foot
Low Cost	\$24.38/square foot	\$21.87/square foot
Fair	\$28.58/square foot	\$25.68/square foot
Average	\$33.05/square foot	\$29.64/square foot
Good	\$43.61/square foot	\$38.19/square foot

Apartment Buildings

Similar figures are provided for apartments. They are listed as "row houses" in the Marshall report. For purposes of this study, the following adjusted values were used.

<u>Type</u>	<u>Class "C"</u>	<u>Class "D"</u>
Low Cost	\$21.94/square foot	\$20.82/square foot
Average	\$29.07/square foot	\$27.39/square foot
Good	\$38.95/square foot	\$36.36/square foot

Non-Residential Structures

In addition to the above-described classes "C" and "D", class "S" construction was observed. The non-residential structures category listing is limited to those where flood damages were incurred. Field survey team members identified the class and type of structures from illustrations in the Marshall report.

Class S

Frame--Metal bents, columns, girders, purlins, and girts without fireproofing, incombustible construction.

Floor--Wood or steel deck on steel floor joists, or concrete slab on grade.

Roof--Steel or wood deck on steel joists.

Walls--Metal skin or sandwich panels, generally incombustible.

Eating and Drinking Establishments

- . Class "C", low cost, \$27.47/square foot
- . Class "D", average cost, \$32.98/square foot

Contractor Operations and Business Services

- . Class "C", average cost, \$14.69/square foot
- . Class "D", average cost, \$12.49/square foot
- . Class "S", average cost, \$13.33/square foot
- . Class "S", low cost, \$10.43/square foot

Retail Stores

- . Class "S", good cost, \$32.83/square foot
- . Class "S", average cost, \$24.96/square foot
- . Class "S", low cost, \$18.05/square foot

Barns

- . Class "S", average cost, \$9.95/square foot
- . Class "S", low cost, \$7.82/square foot
- . Class "D", average cost, \$8.63/square foot
- . Class "D", low cost, \$6.30/square foot

Churches

- . Class "C", good, \$57.57/square foot
- . Class "C", low cost, \$33.04/square foot

Gymnasiums (Schools)

- . Class "C", good, \$47.20/square foot
- . Class "C", average, \$32.89/square foot

Clubhouse

- . Class "S", average, \$29.69/square foot

Appendix C

COMPUTATION OF AGRICULTURAL
DAMAGES--DECEMBER 1982 FLOOD,
CENTRAL AND SOUTH CENTRAL LOUISIANA

Appendix C
COMPUTATION OF AGRICULTURAL DAMAGES--
DECEMBER 1982 FLOOD, CENTRAL AND SOUTH CENTRAL LOUISIANA

Aloha-Rigolette

Bayou Rigolette Reach

Grant Parish

19 hogs--lost (2.20 cwt x \$55.11) 121.24	\$ 3,031
563 cattle--supplemental feed x \$98.67	55,549
563 cattle--relocation x \$5.15	2,899
3,713 tons of hay--lost x \$51.00	189,363
1,125 acres--beans x \$147.89	166,376
2,625 acres--wheat x \$113.37	297,596
1,125 acres--native pasture x \$35.16	39,555
2,625 acres--improved pasture x \$90.77	238,271

Rapides Parish

9 hogs--lost (2.20 cwt x \$55.11) x 121.24	1,091
8 cattle--lost x \$210.69	1,686
120 cattle supplemental feed x \$98.67	11,840
120 cattle--relocation x \$5.15	618
300 acres--beans x \$147.89	44,367
3,700 acres--wheat \$113.37	419,469
5,000 acres--improved pasture x \$90.77	\$ 453,850

Bayou Rigolette Reach Total \$1,925,561

Bayou Du Grappe Reach

6 hogs--lost x \$121.24	\$ 727
187 cattle--supplemental feed x \$98.67	18,450
187 cattle--relocation x \$5.15	963
1,237 tons hay--lost x \$51.00	63,087
275 acres--beans x \$147.89	55,459
875 acres--wheat x \$113.37	99,199
375 acres--native pasture x \$35.16	13,185
875 acres--improved pasture \$90.77	\$ 79,424

Bayou Du Grappe Reach Total \$ 330,494

ALOHA-RIGOLETTE AREA TOTAL \$2,256,055

Rapides Island Area

Livestock

120 cattle--supplemental feed x \$98.67	\$ 11,840
120 cattle--relocation x \$5.15	618
792 tons of hay x \$51.00	40,392

Crops		
2,250 acres--improved pasture x \$90.77		204,233
450 acres--soybeans x \$147.89		66,551
1,800 acres--wheat x \$113.37	\$	<u>204,066</u>

Rapides Island Area Total	\$	527,700
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Bayou Cocodrie Area

Bayou Cocodrie Reach B

Livestock		
30 cattle--lost x \$210.69	\$	6,321
40 hogs--lost x \$121.24		4,850
198 tons of hay x \$51		10,098

Crops		
4,500 acres--improved pasture x \$90.77		408,465
900 acres--soybeans x \$147.89		133,101
4,000 acres--wheat x \$113.37	\$	<u>453,480</u>

Bayou Cocodrie Reach B Total	\$1,016,315
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Bayou Cocodrie Reach D

Livestock		
200 cattle--supplemental feed x \$98.67	\$	19,733
200 cattle--relocation x \$6.00		1,200
1,313 tons of hay x \$51.00		66,938

Crops		
1,400 acres--improved pasture x \$90.77		127,078
500 acres--wheat x \$113.37	\$	<u>56,685</u>

Bayou Cocodrie Reach D Total	\$ 271,634
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Bayou Cocodrie Reach I

Livestock	\$	-0-
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Crops		
600 acres--wheat x \$113.37	\$	<u>68,022</u>

Bayou Cocodrie Reach I Total	\$ 68,022
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Bayou Cocodrie Reach K

Livestock		
5 cattle--supplemental feed x \$98.67	\$	493
5 cattle--relocation x \$6.00		30
33 tons of hay x \$51.00		1,683

Crops		
400 acres--improved pasture x \$90.77		36,308
20 acres--wheat x \$113.37	\$	<u>2,267</u>

Bayou Cocodrie Reach K Total	\$	40,781
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Bayou Cocodrie Reach M

Livestock	\$	-0-
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Crops		
400 acres--improved pasture x \$90.77	\$	<u>36,308</u>

Bayou Cocodrie Reach M Total	\$	36,308
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Eastern Rapides Area

Eastern Rapides Reach 1

Livestock		
5 hogs--lost x \$121.24	\$	606
5 cattle--lost x \$210.69		1,053
80 cattle--supplemental feed x \$98.67		7,891
cattle--relocation x \$6.00		480
561 tons hays x \$51.00		28,611

Crops		
1,500 acres--improved pasture x \$90.77		136,155
300 acres--soybeans x \$147.89		44,367
1,200 acres--wheat x \$113.27	\$	<u>135,924</u>

Eastern Rapides Reach 1 Total	\$	355,087
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Eastern Rapides Reach 2

Livestock		
20 hogs--lost x \$121.24	\$	2,425
20 cattle--lost x \$210.69		4,214
25 bee colonies--lost x \$100		2,500
250 cattle--supplemental feed x \$98.67		24,667
250 cattle--relocation x \$8.00		2,000
1,782 tons of hay x \$51.00		90,882

Crops		
4,400 acres--improved pasture x \$90.77		399,388
1,000 acres--soybeans x \$147.89		147,890
3,600 acres--wheat x \$113.27	\$	<u>407,772</u>

Eastern Rapides Reach 2 Total	\$1,081,738
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Eastern Rapides Reach 3

Livestock

80 cattle--supplemental feed x \$98.67	\$ 7,893
80 cattle--relocation x \$8.00	640
528 tons of hay x \$51.00	26,928

Crops

1,760 acres--improved pasture x \$90.77	\$ 159,755
240 acres--wheat x \$113.27	<u>27,185</u>

Eastern Rapides Reach 3 Total \$ 222,401

Eastern Rapides Reach 4

Livestock

40 cattle--supplemental feed x \$98.67	\$ 3,947
40 cattle--relocation x \$8.00	320
264 tons of hay x \$51.00	13,464

Crops

880 acres--improved pasture x \$90.77	79,878
120 acres--wheat x \$113.27	<u>\$ 13,592</u>

Eastern Rapides Reach 4 Total \$ 111,201

Eastern Rapides Reach 5

Livestock

100 cattle--supplemental feed x \$98.67	\$ 9,867
100 cattle--relocation x \$8.00	800
660 tons of hay lost x \$51.00	33,660

Crops

2,300 acres--improved pasture x \$90.77	208,771
200 acres--wheat x \$113.27	<u>\$ 22,654</u>

Eastern Rapides Reach 5 Total \$ 275,752

Eastern Rapides Reach 6

Livestock

50 cattle--supplemental feed x \$98.67	\$ 4,933
50 cattle--relocated x \$8.00	400
330 tons of hay--lost x \$51.00	16,830

Crops

1,500 acres of improved pasture x \$90.77	136,155
40 acres of wheat x \$113.27	\$ 4,531
200 acres--native pasture x \$35.16	<u>7,031</u>

Eastern Rapides Reach 6 Total \$ 181,615

Eastern Rapides Reach 7

Livestock

10 cattle--lost x \$210.69	\$ 2,107
150 cattle--supplemental feed x \$98.67	14,800
150 cattle--relocation x \$8.00	1,200
1,056 tons of hay--lost x \$51.00	53,856

Crops

2,200 acres--improved pasture x \$90.77	199,694
400 acres--native pasture x \$35.16	14,064
160 acres--wheat x \$113.27	\$ 18,123

Eastern Rapides Reach 7 Total \$ 303,844

Eastern Rapides Reach 8

Livestock

\$ -0-

Crops

3,000 acres--native pasture x \$35.16	\$ 105,480
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Eastern Rapides Reach 8 Total \$ 105,480

Eastern Rapides Reach 9

Livestock

\$ -0-

Crops

50 acres--wheat x \$113.27	\$ 5,664
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Eastern Rapides Reach 9 Total \$ 5,664

Eastern Rapides Reach 10

Livestock

50 cattle--supplemental feed x \$98.67	\$ 4,933
50 cattle--relocation x \$8.00	400
330 tons of hay--lost x \$51.00	16,830

Crops

50 acres--wheat x \$113.27	\$ 5,664
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Eastern Rapides Reach 10 Total \$ 27,427

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